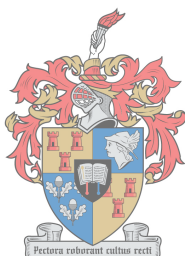


# **EVALUATING THE EFFECTIVENESS OF NUTRITION BEHAVIOUR CHANGE COMMUNICATION INTERVENTIONS AMONG SMALLHOLDER FARMERS IN MAKONI RURAL DISTRICT OF MANICALAND PROVINCE IN ZIMBABWE**

by

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## **Declaration**

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own original work, that I am the owner of the copyright thereof and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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## Abstract

### Introduction

Nutrition education has been identified by the Food and Agriculture Organization of the United Nations (FAO) as critical to ensuring agriculture interventions improve nutrition. The importance of Behaviour Change Communication (BCC) approaches to improving nutrition have been suggested, together with recommendations for research on creating demand for nutritious foods and how this is affected by social, cultural and other factors.

### Aim

This study aimed to evaluate the effectiveness of nutrition BCC interventions implemented by the Livelihoods and Food Security Programme (LFSP) in increasing demand for nutritious foods among smallholder farmers in Makoni district of Manicaland Province in Zimbabwe.

### Methods

The study employed an observational and cross-sectional design, using both quantitative and qualitative data gathering techniques to seek in-depth understanding of knowledge, behaviours and practises for food consumption, the intervention's influence on these, factors affecting them as well as participants' perceptions of the intervention. Secondary intervention data was reviewed to obtain baseline status of participants, followed by five Key Informant Interviews (KII) (n=5) with intervention personnel, 40 (n=40) in-depth interviews with intervention participants and Focus Group Discussions (FGDs) with 81 (n=81) participants divided into four groups. Participants were selected through purposive random sampling. A rapid market survey assessed access and availability of various foods. Quantitative data was analysed using the Statistical Package for Social Scientists (SPSS) while qualitative data was analysed using NVivo.

### Results

The LFSP nutrition BCC intervention increased household food security from 89.5% at baseline to 96.7%, household dietary diversity from 24% of households consuming more than six food groups at baseline to 86.7% after the intervention. Diversified crop production in gardens increased from 56% growing only one type of crop and 20% and 16% growing two and three crops respectively at baseline to more than 70% growing five or more vegetables and 95% growing fruit trees after the intervention. Household consumption of meat and fish and fruits increased from 26.7% and 38.4% respectively at baseline to 65% and 96.7% respectively after the intervention. The intervention introduced biofortified maize and beans high in vitamin A and iron zinc respectively.

Children aged 6 – 23 months achieving Minimum Dietary Diversity (MDD) increased from 12% at baseline to 100% post-intervention. Approximately 93.3% of women of childbearing age achieved the MDD-Women with

more than 80% of women consuming eight of ten assessed food groups. Women's dietary diversity was not assessed at baseline.

Participants felt the intervention successfully increased their nutrition knowledge, ability to diversify crop production and access to varied foods including some new crops. Participants also reported improved knowledge of food preparation and optimum child feeding. The rapid market survey showed that local communities sought processed foods that they could not produce from the local markets. Local markets had little influence on demand for nutritious foods by the intervention population.

## Conclusion

The LFSP nutrition BCC interventions were effective in stimulating demand for diverse and nutritious foods in Makoni district. This proved that nutrition BCC can be effectively delivered in a nutrition sensitive agriculture intervention to influence demand and consumption of diverse, nutritious foods.

Key words: Behaviour Change Intervention, dietary diversity, women and child nutrition.

## Opsomming

Voedingsopvoeding is deur die Voedsel en Landbou Organisasie van die Verenigde State geïdentifiseer as van kardinale belang om te verseker dat landbou-ingrypings 'n positiewe invloed op voeding het. Baie navorsers het die belangrikheid van die gebruik van voedings-gedrag-veranderings-kommunikasie evaluerings aangemoedig. Daar is ook aanbeveel dat daar navorsing gedoen word om die aanvraag na voedsame kosse te skep en die hoë sosiale, kulturele en ander faktore wat dit beïnvloed.

Hierdie studie het ten doel om die doeltreffendheid van voedings-gedrag-verander-kommunikasie ingrypings, wat deur die lewensbestaan en voedselveiligheidsingryping geïmplementeer is, te evalueer en sodoende die vraag na voedsame kosse onder kleinboere in die Makoni-distrik van Manicaland-provinsie in Zimbabwe te verhoog.

Die studie het 'n waarnemings- en dwarsdeursnee-ontwerp gebruik wat beide kwantitatiewe en kwalitatiewe data-insamelingstegnieke gebruik om 'n diepgaande begrip van kennis, gedrag en praktyke vir voedselverbruik te soek. Die invloed van die ingryping op hierdie faktore wat hulle beïnvloed, sowel as deelnemers se persepsies van die ingryping is ook ondersoek. 'n Oorsig van sekondêre ingrypingsdata is gedoen om die basislynstatus van deelnemers te verkry, gevolg deur 5 sleutel informant onderhoude ( $n = 5$ ) met ingrypings personeel, 40 ( $n = 40$ ) in-diepte onderhoude met ingrypings-deelnemers en fokus groep besprekings met 81 ( $n = 81$ ) deelnemers wat in vier groepe gedeel was. Deelnemers is gekies deur doelgerigte, ewekansige steekproefneming. 'n Mark assessering is uitgevoer om die toegang tot en beskikbaarheid van verskillende kosse te bepaal. Kwantitatiewe data is geanaliseer met behulp van die statistiese pakket vir sosiale wetenskappe, terwyl kwalitatiewe data met NVivo geanaliseer is.

Die Voedsel en Landbou Organisasie - voedings-gedrag-veranderings-kommunikasie-ingryping het verseker dat huishoudelike voedselsekuriteit van 89,5% op basislyn tot 96,7% toegeneem het, huishoudelike dieetdiversiteit het van 24% tot 86,7% na die ingryping verhoog. Die groei van 'n wye verskeidenheid gewasse in tuine het gestyg van 56% met slegs een tipe gewas en 20% en 16% onderskeidelik met twee en drie gewasse by basislyn tot meer as 70% wat vyf of meer groente groei. Huishoudelike verbruik van vleis, vis en vrugte het onderskeidelik van 26,7% en 38,4% na onderskeidelik 65% en 96,7% toegeneem. Die ingryping het biogefortifiseerde mielies en boontjies met 'n hoë gehalte Vitamien A, yster, en sink onderskeidelik.

Kinders tussen die ouderdomme van 6 tot 23 maande wat MDD bereik het, het vanaf 12% na 100% na die ingryping toegeneem. Ongeveer 93,3% van vroue in vrugbare ouderdom het die MDD-W behaal met meer as 80% van die vroue wat agt van tien geëvalueerde voedselgroepe verbruik. Die vroue se dieetdiversiteit is nie by die basislyn geassesseer nie.

Deelnemers het gevoel dat die ingryping suksesvol was in die verhoging van hul voedingskennis, die vermoë om 'n wye verskeidenheid gewasse te verbou en hul toegang tot baie kosse, insluitend nuwe gewasse. Deelnemers het ook verbeterde kennis van voedselvoorbereiding en kindervoedings frekwensie en verskeidenheid aangemeld. Die markassessering het getoon dat plaaslike gemeenskappe geprosesseerde voedsel soek wat hulle nie plaaslike kon produseer nie. Plaaslike markte het min invloed gehad op die ingrypings bevolking se vraag na voedsame kosse.

Die Voedsel en Landbou Organisasie - voedings-gedrag-veranderings-kommunikasie-ingryping was effektief om die vraag na diverse en voedsame kosse in die Makoni-distrik te stimuleer. Dit het bewys dat die verandering van voedingsgedrag effektief in 'n voedingsgevoelige landbou-ingryping gelewer kan word om die vraag en verbruik van diverse, voedsame kosse te beïnvloed.

Sleutel terme: Voedsel en Landbou Organisasie, voedings-gedrag-veranderings-kommunikasie-ingryping, voedsame voedsel,

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#### **CONTRIBUTIONS BY PRINCIPAL RESEARCHER AND FELLOW RESEARCHERS**

The principal researcher Delilah Takawira developed the idea and the protocol. The principal researcher planned the study, undertook data collection with the help of two research assistants, Wadzanayi Kuchenguhwa and Rodrick Damabanemweya who assisted with capturing of the data for analyses. The principal researcher analysed the data with the assistance of a statistician, Mr Adam Dodzo, interpreted the data and drafted the thesis. Prof Xikombiso Mbhenyane and Dr Joyce Mulila-Mitti (Supervisors) provided input at all stages and revised the protocol and thesis.



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## Acronyms

AEO	Agriculture Extension Officer
AER	Agro ecological Region
AEZ	Agro ecological Zone
APN	Agriculture Productivity and Nutrition component of the LFSP
BCC	Behaviour Change Communication
CA	Conservation Agriculture
CGAP	World Bank Consultative Group for Assistance
CIRF	Consumption of Iron Rich Foods
DDS	Dietary Diversity Score
DfID	United Kingdom Department for International Development
EHT	Environmental Health Technicians
ENIPPA	Extended Nutrition Impact Positive Practise Approach
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
FGI	Food Group Index
GDP	Gross Domestic Product
HDDS	Household Dietary Diversity Score
HFCS	Household Food Consumption Score
HFPP	Household Food Production Intervention
HH	Household
ICFI	Infant Child Feeding Index
IFPRI	International Food Policy Research Institute
INSPIRE	Improved Nutrition for Sustainable Production and Increased Resilience for Economic growth
IYCF	Infant and Young Child Feeding
KII	Key Informant Interview
LAZ	Length for Age Z-Score
LFSP	Livelihoods and Food Security Intervention
MAD	Minimum Acceptable Diet
MAMID	Ministry of Agriculture Mechanization and Irrigation Development
MAR	Mean Adequacy Ratio
MD	Market Development component of the LFSP
MDD	Minimum Dietary Diversity
MDD-W	Minimum Dietary Diversity for Women

MNDA	Mean Nutrient Density Adequacy
MoHCC	Ministry of Health and Child Care
NAR	Nutrient Adequacy Ratio
NDA	Nutrient Density Adequacy
NGO	Non-Governmental Organization
NIPP	Nutrition Impact Positive Practise
NNS	National Nutrition Survey
OCHA	United Nations Office for Coordination of Humanitarian Affairs
PI	Principal Investigator
SDG	Sustainable Development Goals
SPSS	Statistical Package for the Social Sciences
SUN	Scaling up Nutrition Movement
TIC	Timely Introduction of Complementary Foods
UNDP	United Nations Development Intervention
UNICEF	United Nations Children's Fund
VHW	Village Health Worker
WB	World Bank
WFP	World Food Intervention
WHA	World Health Assembly
WHO	World Health Organization

## Chapter 1: Introduction

### 1.1 Background

Child malnutrition is a constant threat to global health and development. Research evidence has shown that malnutrition, particularly child stunting has long lasting effects on the overall growth and development of the affected children.<sup>1</sup> A stunted child is more likely to die before their fifth birthday, is at a greater risk of contracting many infections, and is more likely to suffer from non-communicable diseases later in life. Concerning productivity and learning capacity, a child who is stunted beyond the age of two years has lowered cognitive capacity, making them more likely to perform poorly at school and has up to 10% reduced earning capacity in adulthood compared to their non-stunted colleagues.<sup>2</sup> Thus, communities with a high prevalence of malnutrition, particularly child stunting are likely to continue suffering from underdevelopment, leading to a vicious cycle of poverty, underdevelopment and malnutrition. This cycle needs to be broken at some point.

Malnutrition results from the interaction between inadequate dietary intake and disease, which is a result of poor-quality foods at household level, poor-quality health and care environments and behaviours. These are influenced by a host of basic factors including; political instability, poor economic development, conflict, inequality and poor education status, particularly of women.<sup>3</sup> Addressing malnutrition therefore calls for collaboration across sectors and integration of interventions to address the causes of malnutrition holistically. Evidence has shown that even if high-evidence nutrition specific interventions (those addressing the immediate causes of malnutrition) are implemented at 90% coverage, it will only address 20% stunting and 60% acute malnutrition. The rest would need to be addressed through nutrition sensitive interventions (those addressing the underlying causes of malnutrition).<sup>4</sup> Nutrition-sensitive agriculture interventions are therefore vital in addressing malnutrition, particularly as far as food intake is concerned. Nutrition-sensitive agriculture, which is agriculture with a nutrition lens, aims to increase availability and access to a wide variety of safe and nutritious foods all year round, while minimising the negative, unintended impacts on child health and nutrition.

Many of the changes required to address malnutrition at the individual, household or community level, such as dietary intake, child feeding and caring practises, health seeking and basic hygiene, such as handwashing, is affected by changes in behaviours and practises, particularly of mothers, primary care-givers of children, families and communities at large.<sup>5</sup> Agriculture interventions, incorporating nutrition behaviour change principles and/frameworks have great potential to address malnutrition holistically and sustainably. This is particularly true for child stunting. The practicality of their implementation and their effectiveness in poor rural communities is however not fully understood.



## 1.2 Global nutrition challenges

Child stunting or low height-for-age, defined as having length-for-age more than two standard deviations below the World Health Organisation (WHO) reference median (length-for-age Z-score,  $<-2$ ), affected approximately 156 million children under the age of five in 2015.<sup>6</sup> Although there was some progress in decreasing these rates, progress was reported to be too slow and Africa and Asia bore the largest brunt of child malnutrition of all forms. The same report further elaborated that more than half of all the stunted children under the age of five years (56%), lived in Asia, while more than a third (37%) lived in Africa. Similarly, nearly half of all overweight children under five years of age (48%) lived in Asia while a quarter (25%) lived in Africa. The report also indicated that Africa made the least progress in reducing the number of malnourished children between the year 2000 and 2015 (17%), compared to 36% reduction in Asia and 39% reduction in Latin America and the Caribbean. The latter were on track to meet their World Health Assembly (WHA) targets for reducing child malnutrition in Africa.

An estimated 45% of all deaths of children under the age of five years are linked to malnutrition – including; stunting, wasting, foetal growth retardation, deficiencies of vitamin A and zinc, together with sub-optimal breastfeeding.<sup>7</sup> Malnutrition and diets have by far become the largest risk factors responsible for the global burden of disease.<sup>8</sup> The annual economic consequences of malnutrition on the world gross domestic product (GDP) has been estimated at 10%, a figure far greater than the estimated annual impact on the world GDP resulting from the global financial crisis of 2008 to 2010.<sup>9,10,11</sup> Emerging evidence from the United States and China has shown significant economic impacts of lifestyle conditions such as obesity and diabetes to households. One obese person in a household in America has been shown to increase their household's annual health care costs by up to 8% of its annual income.<sup>12</sup> In China, people diagnosed with diabetes face a resulting annual income loss of 16.3%.<sup>13</sup>

## 1.3 The nutrition situation in Zimbabwe

Child stunting is the main nutrition problem in Zimbabwe, affecting more than a quarter (27%) of all children under the age of 5 years.<sup>14</sup> A stunted child is too short for their age and the condition is an indicator of chronic or recurring malnutrition, resulting in failure to grow both physically and cognitively. Stunting is associated with low socio-economic status, low educational level of parents, poor water supply and sanitation, and high infectious disease burden. The condition reflects the cumulative effects of socio-economic, environmental, health, and nutritional conditions. Child-stunting prevalence rates are the lowest (13%) in children aged 6 – 8 months and the highest (39%) in children aged 24 – 35 months.<sup>15</sup> These sharp increases coincide with the period when children are being offered complementary foods. Stunting levels are also higher amongst boys (30%) than girls (24%) and higher in rural areas (29%) than urban areas (22%).<sup>16</sup> Children of mothers with

tertiary education were less likely to be stunted (9%) compared with children whose mothers had no education (45%). An estimated 10% of all babies in Zimbabwe are born stunted, reflecting a need for pre-conception, maternal, and adolescent nutrition interventions.<sup>17</sup> Given the extent of the problem of stunting in Zimbabwe; nutrition-sensitive programming should be stunting sensitive.

To address child stunting systematically, interventions should target children from conception until the age of two years – often called the window of opportunity, or the first 1000 days.<sup>18</sup> The 1000 days between a woman's pregnancy and her child's second birthday offer a unique window of opportunity to build healthier and more prosperous futures. Nutrition during pregnancy and in the first two years of a child's life provides the foundation for optimum brain development, normal, healthy growth and a robust immune system. A growing figure of scientific evidence shows that the building blocks of a person's lifelong health, including their likelihood of becoming obese or suffering from some chronic diseases are mostly determined during this 1000-day window. For this reason, it is imperative that women of childbearing age and children receive optimal nutrition during this time.

Malnutrition early in life has the potential to cause irreversible damage to brain development and physical growth of children, leading to reduced learning capacity, poor school performance, increased susceptibility to infection as well as a lifetime of lost earning potential.<sup>19</sup> It can even put affected children at increased risk of developing illnesses such as heart disease, diabetes and certain types of cancers later in life. The impact of poor nutrition early in life has lasting effects that can span through generations. This is seen throughout the world, as malnourished women give birth to malnourished daughters who themselves grow up to become malnourished mothers, hence perpetuating the cycle.<sup>20</sup>

The damage done by malnutrition during the early years of a child's life translates into a huge economic burden for countries, costing billions of dollars in lost productivity and avoidable health care costs. Focusing on improving nutrition during the critical first 1000 days can go a long way towards preventing much of the serious and irreparable damage caused by hunger and malnutrition.<sup>21</sup>

Zimbabwe is experiencing a double burden of malnutrition with steadily increasing rates of overweight and obesity amongst women and children. Prevalence of overweight and obesity amongst children under the age of five years was 6% and 35% amongst women aged 15 – 49 years.<sup>15</sup> Micronutrient deficiencies, also called hidden hunger, are another form of malnutrition affecting women and children in Zimbabwe. The National Micronutrient Survey of 2012 reported high vitamin and mineral deficiencies representing public health concerns.<sup>17</sup> Anaemia prevalence amongst children aged 6 – 59 months was at 37% and 27% amongst women of child bearing age (15 – 49 years).<sup>17</sup>

Although Zimbabwe made good progress in reducing stunting in 2015, progress is not on course with some World Health Assembly (WHA) nutrition targets<sup>1,22</sup>. The country is not on course to achieve the anaemia reduction target but on-course, with good progress towards achieving the overweight target and on-course on the wasting and exclusive breastfeeding targets.

An unpublished desktop study conducted in Zimbabwe by FAO in February 2014 revealed that dietary diversity, daily feeding frequency and the quantity (volume) of food offered to children per meal were contributory to the prevailing stunting levels. The lowest dietary diversity was prevalent in children aged 6 to 8 months, much more than in the older age groups. There was a negative relationship between food insecurity and levels of stunting. Child stunting was high in food secure districts, ranging from 30% to 47.8%. This trend suggested other causal factor(s) including, but not limited to, caregivers' time constraints and possible knowledge gaps. Despite good agricultural potential, less than 10% of households in the food secure districts were providing a minimum acceptable diet (MAD) to their children aged 6 to 24 months in 9 out of 12 districts studied.<sup>23</sup> Poor dietary diversity for infant and young children as well as the entire family was suggestive of undiversified farming systems in the districts of high agriculture potential. The study therefore attributed stunting to:

- General food insecurity for areas of low agricultural potential,
- Undiversified cropping systems in areas of high agricultural potential,
- Women's workload, and
- Overall lack of knowledge concerning optimal infant and young child feeding (IYCF).

Other non-food related causes of stunting identified in the study included poor household hygiene and access to clean, safe water and adequate sanitation, as well as unconfirmed and fully investigated evidence of chronic aflatoxin exposure.

The causes of malnutrition in any population are many and are a result of many factors across the sectors, from health, agriculture, water and sanitation to inadequate social protection and low education levels of parents, particularly mothers. The Lancet 2013 series on Maternal and Child Health presented a new framework for addressing malnutrition, which is a modification of the UNICEF conceptual framework on the causes of malnutrition.<sup>20</sup> The series highlighted a set of high impact nutrition specific interventions that must be implemented at large scale to address the immediate causes of under nutrition. These are inadequate dietary intake and disease. The same report also indicated that effective, large scale nutrition sensitive interventions that address the key underlying determinants of nutrition are required to help accelerate

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<sup>1</sup> In an effort to accelerate global action against the detrimental impacts of double burden of malnutrition, in 2012 the World Health Assembly Resolution 65.6 endorsed a Comprehensive implementation plan on maternal, infant and young child nutrition, which specified a set of six global nutrition targets that by 2025 aim to achieve: a 40% reduction in the number of children under-5 who are stunted; a 50% reduction of anaemia in women of reproductive age; a 30% reduction in low birth weight; ensure that there is no increase in childhood overweight; increase the rate of exclusive breastfeeding in the first 6 months up to at least 50%; reduce and maintain childhood wasting to less than 5%.

progress in nutrition and to enhance the coverage and effectiveness of nutrition-specific interventions. Such interventions include those in the agriculture and food security sector.<sup>20</sup>

## 1.4 The Livelihoods and Food Security Programme (LFSP)

The Food and Agriculture Organization of the United Nations (FAO) in Zimbabwe, with financial support from the United Kingdom's Department for Foreign and international Development (DfID), managed a 48 million United States dollar Agriculture Productivity and Nutrition (APN) component of the LFSP. The LFSP-APN was an agriculture value chain intervention, implemented in eight districts, across three provinces in Zimbabwe. One of these districts was Makoni in the eastern province of Manicaland. The LFSP started in November 2013, ending in November 2017, with the potential for extension beyond this end date. The LFSP-APN was implemented in Makoni by a consortium of Non-Governmental Organisations (NGOs) under the name: Improved Nutrition for Sustainable Production and Increased Resilience for Economic growth (INSPIRE), led by Goal Zimbabwe.

The LFSP targeted category B1<sup>2</sup> farmers (who constituted approximately 80% of the communal farmers in the district) and their families, and aimed to improve food, nutrition and income security among these smallholder farmer households. This was to be achieved through promoting viable agriculture value chains of high value crops, such as sugar beans (including high iron and zinc biofortified beans), green maize (including a biofortified vitamin A orange maize variety), paprika, other horticultural crops and small livestock, such as broiler and layer chickens, beef fattening and piggery. Climate smart agriculture approaches were promoted to curb the negative effects of unpredictable weather and rainfall patterns on agricultural productivity. Farmers were organised into groups where they received agriculture extension training, linked to markets and introduced to various rural finance support mechanisms, such as community based microfinance and macro and micro-finance institutions.

The LFSP was a nutrition sensitive-agriculture intervention, aimed, among other things, at contributing to reducing stunting in Makoni district. An estimated 34% of children under the age of five in the Makoni district were stunted.<sup>22</sup>The intervention aimed to achieve its objective through: **increasing the production and consumption of diverse and nutritious foods, focusing on households as well as women of childbearing age and children aged 6 to 24 months**. In addition, positive nutrition and health behaviours, such as household hygiene, hand washing, exclusive breastfeeding for children aged 0 to 6 months, optimum complementary feeding for children aged 6 to 23 months and prevention of childhood illnesses were

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<sup>2</sup> Category B1 farmers are defined in this intervention as poor households with some access to land and labour, typically involved in low-input / low productivity agriculture of livestock rearing and depending partly on wage labouring for their livelihoods, who could be supported to increase their productivity and become more food and nutrition secure.

promoted. The first 1000 days approach was used for targeting the nutrition intervention. The INSPIRE intervention adopted an approach called Nutrition Impact and Positive Practise (NIPP), which is essentially a peer-to-peer, positive deviance behaviour change communication (BCC) strategy. The NIPP addressed multiple causes of malnutrition in a holistic manner, focusing on dietary diversity, water and sanitation, and hygiene promotion. In the LFSP-APN, slight modifications were made to this model and the name changed to extended NIPP approach (ENIPPA). The latter put women and men into groups of up to 15 people called ENIPPA Circles. In these groups, a lead mother/facilitator was selected, based on already practising the positive nutrition and health behaviours being promoted. The women and men received training, practical demonstrations and information on the selected nutrition and health behaviours. They then helped each other to practise these behaviours in their homes and share experiences on outcomes and influence each other to adopt the promoted behaviours.

Nutrition education and training was also provided to agriculture extension officers and they passed this information to both men and women farmers as they interfaced with them during agriculture extension activities. These messages were centred on promoting diversified production for household consumption using cropping methods like conservation agriculture (CA), crop rotation and intercropping. Another component of the intervention - the Market Development (MD) linked farmers to markets through creating demand with food processors, medium and large-scale marketers of fresh foods and facilitating contract-farming arrangements for the target farmers. A Market Development component helped to ensure that safe, diverse and nutritious foods, were available, on the local markets in the intervention areas through increasing the supply from both farmers and food processors/producers.

## **1.5 Problem statement**

Nutrition sensitive agriculture interventions are key components in addressing malnutrition in low and medium income countries, including Zimbabwe.<sup>24</sup> Agriculture is the source of all nutrients that sustain human life. Increased production of a variety of crops and livestock, especially small-stock is vital in determining what people eat, particularly amongst rural poor households who rely on their own local production for consumption. It is also in these very areas where a prevalence of malnutrition amongst women and children is high. Access to a variety of food types is challenging and seasonal food shortages are rampant. Available evidence has shown that a nutrition BCC intervention is an important instrument for turning increased agriculture production into improved nutrition.

Several agriculture interventions aimed at increasing agriculture production and productivity of crops and livestock amongst rural smallholder farmers have been implemented in Zimbabwe. Nutrition objectives have not always been included in the design of many of these interventions although the expectation was to

ensure that the increased agriculture production would lead to improved nutrition outcomes. Intervention evaluations have not focused on assessing the impacts of these interventions on nutrition. However, the interest of intensifying and increasing the impacts of agriculture interventions on nutrition has increased and many interventions have and are being designed to increase agriculture production and improve nutrition outcomes. One such intervention was the 48 million United States dollar LFSP that was implemented in eight districts in Zimbabwe. The intervention aimed to increase the demand, production, and consumption of safe, diverse, and nutritious foods, including biofortified crop varieties (vitamin A orange maize and high iron and zinc beans) in target households.

According to a nutrition discussion paper by the International Food Policy Research Institute (IFPRI), there is a call for further understanding how to create demand for nutritious foods amongst rural communities. The starting point is an in-depth understanding of the prevailing nutrition problem as far as diets and consumption patterns are concerned, and taking into consideration the available nutrition information, knowledge, attitude and practises that these communities have access to.<sup>25</sup> An in-depth understanding of the cultural and market implications of changes in increased demand for safe and nutritious foods is also recommended. This study sought to respond to this identified need, focusing on an evaluation of the LFSP in the Makoni district of Manicaland province in Zimbabwe.

The intervention focused on increasing the demand for safe, diverse and nutritious foods amongst target households and to address some main identified nutrition related problems. A nutrition BCC intervention was implemented as part of the intervention. The MD component of the LFSP increased market access to nutritious foods and provided a market for the increased food being produced by the intervention. Evaluating the effectiveness of the nutrition behaviour change interventions implemented by the LFSP and how they influenced demand for nutritious foods is expected to generate critical evidence that can contribute to the global wealth of knowledge and understanding of how optimised agriculture can benefit nutrition. The findings will contribute towards the improved designing of agriculture interventions in Zimbabwe, and the world, to ensure increased impacts on nutrition.

### 1.5.1 Central question

This study is expected to answer the following central question: **Can nutrition BCC effectively be delivered through an agriculture intervention, to influence food consumption related behaviours, and increase the demand for diverse and nutritious foods?**

#### Sub questions

1. How did the intervention stimulate an increase in demand for diverse, nutritious foods?
2. How effective were the interventions in stimulating the demand for varied, nutritious foods?

3. What were the factors influencing demand for varied and nutritious diets?

### 1.5.2 Study aim and objectives

#### Aim

The aim of the study was to evaluate the effectiveness of nutrition BCC by the LFSP<sup>3</sup> in increasing the demand for diverse and nutritious foods by smallholder farming households in the Makoni district, and the influence of social, cultural and market factors on this increased demand.

#### Objectives

The study especially sought to:

1. Conduct a situational analysis using secondary data from the intervention reports to:
  - a. Determine the socio-demographic parameters of the study population at baseline,
  - b. Determine the BCC strategies employed by the intervention to stimulate demand for diverse and nutritious foods and the progress to date,
  - c. Determine intervention participants' knowledge and behaviours associated with demanding nutritious foods at baseline.
2. Assess the nutrition BCC activities conducted by the intervention through key informant interviews with intervention staff, to assess their views on effectiveness.
3. Assess the socio-demographic household parameters, household food security status and household dietary patterns using the Household Food Insecurity Access Score and dietary diversity scores for women and children in participants' households, after the intervention.
4. Assess the participants' food knowledge, factors affecting household food consumption, barriers and enablers to optimum food consumption and perceptions about the intervention.
5. Determine the participants' perceived benefits from the intervention, effects of culture and socio-economic factors on adoption of new practises and perceptions on sustainability of adopted practises.
6. Assess the local markets' supply of diverse and nutritious foods and the factors influencing these after the intervention.
7. Make inferences on the intervention's effectiveness in stimulating demand for diverse and nutritious foods, through comparing baseline and post intervention data as well as participants' perceptions on the intervention, and suggest recommendations for improving the intervention to increase impacts and design of future similar interventions.

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<sup>3</sup> LFSP – Livelihood and Food Security Intervention – A four year agriculture value chains intervention funded by the United Kingdom Department for International Development (DFID), with 2 main components, one of which – the Agriculture Productivity and Nutrition, is managed by the Food and Agriculture Organization of the United Nations and being implemented by a consortium of Non-Governmental Organizations (NGOs) under the leadership of Glean, an Irish NGO. At community level, the intervention is known as Improved Nutrition for Sustainable Production and Increased Resilience for Economic growth (INSPIRE).

For the purposes of this evaluation, “effectiveness” was defined as the degree to which objectives were achieved and the extent to which targeted problems were solved. The main objective of focus in this study was “increasing intervention participants’ demand for varied and nutritious diets”. For the purpose of this study, “demand for nutritious diets” was defined as the willingness to buy or seek by other means such as own local production a wide range of foods that are nutritious and nourishing to the body. Food consumption patterns, participants’ knowledge of nutrition and healthy eating, as well as their perceptions and beliefs were used to assess these parameters in sampled households.

## **1.6 Expected significance of findings**

The study results are expected to contribute towards the global wealth of evidence on the relationships of agriculture with nutrition, particularly how BCC within a nutrition-sensitive agriculture value chain intervention, targeting smallholder farmers in a low-income country, can increase impacts on nutrition. This study will provide useful recommendations to inform and guide the design of nutrition education or BCC strategies in nutrition-sensitive agriculture interventions. It will also provide valuable information that can help inform future research such as done by the IFPRI to further understand how agriculture value chains can contribute towards improving the nutritional status of women and children.

The report of this study is expected to inform a possible extension of the LFSP. The intervention end date was set at 30 November 2017, but there is talk of possible extension with an additional 3 years to fully consolidate gains and maximise impacts on long term indicators such as stunting.

Should the donor grant an extension, this evaluation will serve as a formative evaluation that can be used by the intervention designers and implementers to review their methodologies to increase the intervention’s impact on nutrition. The success of the LFSP will contribute towards Zimbabwe’s achievement of the 2025 World Health Organization Global targets on nutrition, SDG 2 and other food security and nutrition targets set in the Zimbabwe Food and Nutrition Security Policy and the National Nutrition Strategy.

## **1.7 Chapter synopses**

This document is organised in seven chapters, starting with an introduction providing some background information into the global, regional and national nutrition situation and what is being done to address malnutrition challenges. The focus is on what agriculture can do to address malnutrition challenges and how effectively this sector can deliver diverse, wholesome and nutritious diets, particularly to rural, smallholder



farming communities. Chapter 2 focuses on a review of literature regarding nutrition sensitive agriculture, how agriculture production can impact nutrition, nutrition BCC theories and how they have been applied in interventions and food demand. It also highlights the various methodologies used to measure household food security and dietary diversity for individuals, households and population groups. Chapter 3 details the methodology employed in the study, including how data was collected and analysed. The results of this data analyses are detailed in Chapter 4, which focuses on results of the quantitative data analysis. Results of the qualitative data analysis are outlined in Chapter 5, which is followed by a discussion of the results in relation to study context and literature in Chapter 6. The final chapter, Chapter 7 concludes the discussion, highlights key recommendations, proposes future research focus and states the limitations of the study.

## Chapter 2: Literature review

### 2.1 Introduction

This chapter is an appraisal of various authors' views and research findings on pathways relating agriculture with nutrition, how agriculture interventions can have better impacts on nutrition and highlights the evidence associating impacts of agriculture to nutrition. It also contains literature on how to estimate macro and micronutrient adequacy of diets for households, women and children. In addition, the chapter reviews literature on nutrition BCC as an essential catalyst for ensuring agriculture interventions impacts the nutrition status of women and children in marginalised communities. The concept of food demand and the various facets and determinants thereof are appraised in relation to increased nutrition awareness amongst low-income communities. The chapter seeks to provide a basis and scientific justification for the methodologies employed in this study, which sought to evaluate the effectiveness of nutrition BCC methodologies in increasing demand for nutritious foods among smallholder farming communities participating in an agriculture and livelihoods intervention. Later in the dissertation the results of the study will be discussed against the literature review detailed in this chapter.

### 2.2 Nutrition and agriculture relationships

The relationship between nutrition and agriculture appears obvious and intuitive. Agriculture is the producer and supplier of food and hence the source of all nutrients. Without agriculture production, it would be difficult for many nations to feed their ever-growing populations, let alone in a manner, that meets all their nutrient needs for growth and development. Agriculture is also a source of income for most rural households and a significant driver of growth for most developing countries in Africa, including Zimbabwe.<sup>26</sup> Various authors have attempted to establish the pathways connecting agriculture to good nutrition outcomes.<sup>27 28</sup> Reviews of these pathways have shown varying strengths and effectiveness of the relationships.<sup>29</sup>

The first pathway proposed by the World Bank, links agriculture to increased macro-economic growth and available evidence shows modest impacts on nutrition, particularly child stunting.<sup>29</sup> Longitudinal analyses data showed no significant correlation between stunting reduction and annual economic growth. Evidence from India showed that increased agricultural economic growth in some states had a positive correlation with malnourishment, and women's malnourishment increased during the same period.<sup>30</sup> The second proposed pathway links higher food production with lowered food prices, hence increased economic access to food for households. This pathway was observed to be only effective when food refers to all the various foods needed for a healthy life and not just calories.<sup>29</sup> A study in Java island in Indonesia, showed significant

price escalations in non-staple foods during the food price crisis of 1999 and these escalations were associated with reductions in consumption of the affected foods: meat, fish, vegetables, fruit, milk, and eggs.<sup>31</sup> In this scenario, price escalations led to a reduction in the consumption of affected foods and the reverse was expected to be equally true.

The third pathway links agriculture to nutrition through increasing household income from the sale of agricultural products. Available evidence has; however, shown that increased household income does not necessarily improve the nutritional status of the most vulnerable members in the household.<sup>32</sup> One study in Ethiopia found that 40% of children were stunted in the country's richest wealth quintile.<sup>33</sup> Similarly, evidence from India showed that 25% of children in the country's highest wealth quintile were stunted, despite significant economic growth. In these two studies, increase in household income did not have any positive, direct impact on the nutritional status of the most vulnerable members of the population.<sup>34</sup> However, more reviewed evidence showed a stronger correlation between women's increased income with improved nutrition.<sup>35</sup>

The fourth pathway links agriculture to nutrition through increasing nutrient dense food production for household consumption. This pathway has been shown to have impacts on improving micronutrient intake.<sup>29</sup> A DfID funded review showed that home gardening, aquaculture and dairy interventions had a significant impact on improving dietary diversity, micronutrient intake, and nutritional status of beneficiary households, particularly concerning vitamin A.<sup>36; 37</sup> Other studies showed that diversified crop production, influences dietary diversification.<sup>38</sup> Another study also showed that crop biofortification can improve micronutrient status of people consuming the crops, if they are consumed regularly.<sup>39</sup> Interventions including nutrition education, social marketing and BCC promoting consumption of these foods were shown to have more positive outcomes.<sup>40 41</sup> In summary, increased agriculture production of nutrient dense crops and small livestock was, in many studies associated with increased micronutrient intake, particularly when linked with BCC to promote uptake for production and consumption.

The fifth pathway links agriculture to nutrition through women empowerment, achieved through specific targeted interventions. Available evidence shows this as the strongest pathway.<sup>29</sup> A multicounty analysis showed that improving women's education and overall social status led to the reduction of child malnutrition by more than half between 1970 and 1995.<sup>42</sup> A significant amount of evidence across many regions shows

that increasing women's discretionary income improves child nutrition status and overall household food security much more than when income is controlled by men.<sup>43</sup> Agriculture interventions that improve women's access to financial resources accruing from their labour and training women on crop and livestock production and marketing their produce improve gender equity resulting in greater impacts on nutrition.<sup>29</sup> However, there is need to strike a balance between women's participation in agriculture activities and ensuring they have time to play their maternal role of primary care-givers for children. An increased time burden in agricultural activities can have unintended negative impacts on child-care and hence nutrition status.<sup>29</sup> Evidence has shown that in the absence of affordable child care, children of women participating in labour intensive agriculture interventions are left in the care of older siblings (mostly older girls), resulting in reduced breastfeeding, and a lack of time to prepare nourishing meals, hence affecting their nutrition status. These young children were also less likely to access health services. Studies further showed that agricultural production also suffers, and the women may fail to seek other off-farm income generating activities.<sup>44</sup> Increased maternal activity during pregnancy increased poor birth outcomes. Labour and time saving agriculture production technologies are needed to increase women's productivity and hence their level of discretionary income from agriculture.<sup>44</sup> Without this; agriculture can have negative, unintended harm on nutrition.

The reviewed evidence showed that agriculture is related to food security, nutrition security and subsequently good health outcomes. Promoting food-based approaches to increase access to high quality diets is one sure way that agriculture can address nutrition challenges faced by many low and middle-income countries.<sup>45</sup> However, these relationships are more complex and do not simply translate to increased production for increased consumption. Other reviewed evidence showed that agriculture and food systems have focused more on producing plenty of high calorie foods than diversified production, increasing access to a wide range of foods needed to meet the nutrient needs of families. Food systems have been encouraged to focus on nourishing, rather than just to feed people.<sup>46</sup>

Malnutrition caused by poor<sup>4</sup> and unsafe diets has become the number one major risk factor for disease globally, and poor diets were causing a greater risk to mortality and morbidity than the combined risks of unsafe sex, alcohol, drug and tobacco use.<sup>46</sup> Encouragingly, significant evidence from other studies showed that diversifying on-farm production – increasing the number and type of foods grown by subsistence, smallholder farmers in rural communities such as is in Zimbabwe, can have a strong impact on dietary diversity.<sup>47</sup>

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<sup>4</sup> Diets containing insufficient energy, vitamins and minerals or too much energy, saturated fats, salt and sugar.

The agriculture value chain concept has, over the years, been recognised by intervention implementers and researchers as useful in designing strategies to achieve nutrition goals in agriculture interventions.<sup>48</sup> The value chain for nutrition approach was defined as the process of developing a strategy that addresses a set of nutrition problems through interventions within specific value chains.<sup>49</sup> Value chains improve nutrition through three main ways: increased consumption of nutritious foods – a demand-side pathway; increased incomes from value chain transactions – a supply side pathway and through increased nutrition value-addition in the chain transactions. However, researchers saw that there is need to further understand how to create a demand for nutritious foods amongst rural communities. This should start with an in-depth understanding of the prevailing nutrition problems in the target communities as far as diets and consumption patterns are concerned, and taking into consideration the available nutrition information, knowledge, attitude and practises that they have access to.<sup>49</sup> An in-depth understanding of the cultural and market implications of changes in increased demand of safe, nutritious foods was also considered necessary to understand the dynamics between agriculture value chains and nutrition.<sup>49</sup>

## 2.3 Impacts of agriculture on nutrition

To increase the impacts of agriculture on nutrition, which was brought about by the increased attention on nutrition since the inception of the Scaling up Nutrition Movement in 2010, several reviews and studies were conducted to assess the impacts of agriculture on nutrition and health. One systematic review examined and summarised the effects of agricultural interventions of increased household food production on the nutrition and health outcomes of women and young children.<sup>50</sup> The review examined 36 articles, representing 27 unique interventions. The results indicated that home gardens, incorporating livestock production, were associated with improved dietary diversity scores and increased consumption of vitamin A-rich fruits and vegetables.<sup>51 52 53 54</sup> It also indicated increased consumption of legumes, other fruits and vegetables and improved child complementary feeding.<sup>55 56 57 58</sup> All the reviewed interventions incorporated intensive nutrition education, focussed on women. Across the reviewed interventions' study sites, consumption of vitamin A-rich foods and legumes (pulses) and consumption of eggs by children increased substantially – between 36% and 150%.<sup>59</sup> These increases were not reported in comparison communities. Diet diversity scores were also significantly higher in intervention areas than comparison areas.

As far as the impact on women's diets was concerned, overall dietary diversity and increased consumption of vitamin A rich foods was more or less similar to that of children.<sup>60 61 62</sup> Eight of the reviewed studies reported changes in macro- and micronutrient intakes by children, particularly vitamin A.<sup>63 64 65 66</sup> The evidence for other nutrients was; however, varied.<sup>67 68 69 70</sup> This review concluded among other things that existing evidence supports the hypothesis that agricultural strategies improve intakes of micronutrient-rich foods by women and young children when nutrition education, gender and nutrition objectives were overtly

stated. The review recommended that future research examine the integration of nutrition education and gender in intervention designs, and a need to build further evidence from the African region.<sup>71</sup>

Another systematic review focused on the impact of potential agricultural interventions, aimed at improving children's nutritional status by improving the incomes and diet of the rural poor.<sup>72</sup> This review looked at both published and unpublished data obtained through a systematic literature search. Reviewed interventions included biofortification, home gardens, aquaculture and small fisheries, dairy development and promotion of animal foods sources. A total of 23 studies were included in the systematic review. The reviewed studies did not report on participation rates, neither did they describe the socio-economic characteristics of the intervention participants, nor modelled the determinants for participation. As far as impacts on improving incomes was concerned, one study found statistically significant positive impacts on income increase among dairy farmers of 40% higher than amongst non-dairy farmers.<sup>73</sup> Another study showed that households with home gardens had slightly higher incomes than those without, but the statistical significance could not be established.<sup>74</sup> An aquaculture study showed that income increased more rapidly among farmers in aquaculture interventions and the end line income levels were 40% higher amongst the intervention participants. However, no statistical significance could be established.<sup>75</sup> In a poultry intervention study, income was shown to be higher by 15% amongst household participating in the poultry promotion intervention.<sup>76</sup> Another home gardens study discovered that incomes were 60% higher in households with home gardens than those without.<sup>77</sup>

The results of the impacts of the reviewed studies on dietary intake revealed that the majority of studies found positive impacts of the interventions on the consumption of specific foods. A study that sought to demonstrate association between agricultural interventions and nutritional outcomes showed that the reviewed agriculture interventions resulted in higher consumption of vegetables, rice, fish and oils at household level. They also resulted in stable consumption of meat and a reduction in consumption of pulses.<sup>78</sup> The study on dairy farmers mentioned above, showed a 42% increase in household intake of milk amongst farmers participating in a dairy intervention than those who were not. An evaluation of an integrated community-based growth monitoring and vegetable gardens intervention, that focused on crops rich in  $\beta$ -carotene in the Eastern Cape in South Africa, showed an increased consumption of butternut, and sweet potato, but not of carrot and pumpkin. This evaluation focused on children aged 1 to 5 years.<sup>79</sup> The study also showed that the production of targeted nutrient-rich crops, homestead gardens, and diversified agricultural production systems, including fruit trees, can potentially improve nutrient intake and nutritional outcomes. Nutrition knowledge and women empowerment helped strengthen these agriculture – nutrition linkages.

An impact evaluation of the Hellen Keller International Homestead food production interventions (HFPP) in Bangladesh, Cambodia, Nepal and the Philippines, focused on approximately 30 000 households that participated in the intervention between 2003 and 2007.<sup>80</sup> The evaluations indicated increased availability and consumption of fruits and vegetables, animal products such as eggs and liver, in participating households and amongst children aged 6 to 59 months. The results also showed a decrease in anaemia amongst the same age gender and categories in some of the intervention countries. Women's participation in household decision making also improved, demonstrating the potential of agriculture interventions in improving nutrition outcomes.

In another evaluation of the HFPP in Cambodia only, two cross-sectional surveys were conducted at baseline and at end line to assess the differences between intervention households and controls using the chi-square test of significance. Using the end line data and applying multivariate analysis, intervention impact pathways on maternal, child health and nutrition were analysed.<sup>81</sup> Results showed similar household socio-economic characteristics at baseline and differences in household ownership of animals, income earned from household food production and production and consumption of nutrient-rich crops. At end line, more intervention households had adequate dietary diversity, consumed more fruit and vegetables and their children under the age of five were less likely to have fever a week prior to the survey. Intervention households also consumed more animal food sources, such as eggs, than control households, and the women consumed more nutrient rich foods. There were; however, no differences in maternal and child health and nutrition status between the two groups. It appeared increased household food production was associated with improved dietary diversity; however, dietary diversity did not have an impact on maternal and child health and nutrition status.

## **2.4 Estimating macro and micro-nutrient adequacy of diets**

Diets, which essentially refer to the various foods people consume over a period of time, are very essential for providing the relevant nutrients required by the body to function well. Good diets provide the body with the relevant and adequate nutrients needed for growth, repair, and maintenance of health. Poor diets are either deficient of some macro and micro-nutrients or contain too much of certain nutrients which can have adverse impacts on health and well-being. The ability of scientists (Nutritionists and Dieticians) to prescribe, recommend or promote appropriate diets for different people, to meet their nutrient requirements for an active healthy life, is based on the science of estimating dietary intakes. Researchers and scientists have proposed and used various methods to estimate dietary nutrient intakes.<sup>82 83 84</sup> These can either be at the individual, household or community/population level. The ability to estimate the macro and micro-nutrient adequacy of diets at the population level is vital to public health nutrition interventions. According to the UNICEF conceptual framework on the causes of malnutrition, inadequate dietary intake and disease are the

two immediate causes of malnutrition. These two are interrelated; meaning a problem with one can cause problems with the other. The ability to provide adequate diets to children can therefore be a major first step towards ensuring good nutrition status of the child.

Several studies have been conducted to assess, and or review the efficacy of the use of various methodologies for assessing dietary adequacy. The latter, referring to the ability of the diet to meet the macro-, as well as the micronutrient requirements of consumers. One such study was an evaluation of the methodologies for assessing overall diet quality.<sup>85</sup> In this study, the author reviewed several methodologies used for studying the overall diet, highlighting the advantages and limitations of each. The author highlighted three approaches used to study overall diets. The first uses researcher-defined scores or indices of diet quality, based on guidelines for a healthy diet or on diets known and understood to be healthy. The second approach used principal component or cluster analysis and was driven by underlying dietary data. Scales were derived based on the underlying associations between food groups. In the cluster analysis, subgroups of the population were created based on their dietary intake. The third approach combined biological pathways with underlying dietary data. Using rank regression, linear combinations of food intake were used to explain nutrient intakes and showed to be immediate markers of disease. Using the decision tree analysis, subgroups of populations with members sharing dietary patterns, that influence disease, were created. The study concluded that all approaches had advantages and limitations and can be used fundamentally to answer different questions.<sup>85</sup> Dietary quality scores were useful tools to monitor the overall adherence to dietary guidelines, and the overall dietary quality of a population. Comparisons within and between populations could be made to formulate or evaluate the need for dietary interventions.

Another study which aimed to describe diet quality tools and their applications and to examine the relationship between diet quality and disease and death concluded that dietary quality scores were useful tools to test if current dietary recommendations had a measurable protective effect against diseases, and to get perception into the scale of the overall effect.<sup>86</sup>

A South African study assessed whether dietary diversity scores were good indicators of nutrient adequacy of the diet of children.<sup>87</sup> In this study, secondary analysis of dietary data from the nationally representative National Food Consumption Study of 1999 was conducted. An average dietary diversity score (DDS), defined as the average number of different food items consumed from all the possible items eaten was calculated. This was compared to a nutrient adequacy ratio (NAR) and mean adequacy ratio (MAR) calculated using the FAO/WHO 2002 recommended intakes for children. The MAR was used as a composite indicator for micronutrient adequacy. The Pearson correlation coefficients between DDS and MAR were computed and also evaluated for sensitivity and specificity, with MAR taken as the reference of adequate intake. The association between MAR and DDS and between anthropometric Z-scores and DDS were also evaluated. The



study concluded that dietary diversity scores could be used as simple and quick indicators of the micronutrient adequacy of the diet.<sup>87</sup>

A systematic review assessed studies that had used dietary indices<sup>5</sup> to assess different aspects of a diet in relation to health outcomes and sociodemographic factors in childhood populations of developed countries.<sup>88</sup> This study focused on 84 papers published between 1980 to mid-2010. From these papers, 90 unique dietary indices were reviewed and 72 of these represented indices developed specifically for childhood populations. Of these, 38 were used to assess diet-disease associations, concerning mostly the association of a diet and obesity. Thirty studies applying 40 indices in cross-sectional assessments indicated associations between dietary indices and diet-related diseases, disease risk factors, and/or biomarkers. The majority of the reviewed studies (71%), showed significant associations of dietary indices in children, with the demographic and nutrient intake, or diet quality. A weighty 54% of studies reported significant associations between indices and various sociodemographic variables, including age, gender, race or ethnicity, income, parental education, socio-economic status, place of living, and marital status of parents. The review concluded that indices were potentially useful methods for dietary assessment, as they offer valuable information on overall dietary patterns in children.<sup>88</sup>

In another study, researchers sought to initiate the process of developing and validating diet quality and quantity indicators for complementary foods consumed by children during the first two years of life.<sup>89</sup> The study used four data sets available at the University of California Davis to corroborate indicators associated with complementary feeding nutrient density and complementary food intake of breastfed infants aged 6 to 12 months. The study tested two research questions: how well dietary diversity indicators predicted dietary quality; and how well frequency of feeding complementary foods to the same age children predicted energy intake; either from complementary foods or total energy intake in different populations with varying patterns.

The study used 4 data sets from Ghana, Peru, Bangladesh and Honduras, giving a total of 1 866 children with dietary intake data for the study. For each of the children, the nutrient intake for the various complementary foods they ate was calculated using the best available food composition data. Estimated bioavailability for zinc, calcium and iron absorbed from the various foods consumed was used when estimating nutrient intake.<sup>90</sup> The study used two dietary diversity indices: The Food Group Index – 8 (FGI-8), based on whether a child had consumed at least 1 g of food from the following 8 food groups; grains, roots and tubers, legumes and nuts, dairy products, flesh foods, eggs, vitamin-A rich fruits and vegetables, other fruits and vegetables

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<sup>5</sup> Dietary indices are measures of diet quality by comparing food intake to a recommended mix of nutrients needed for good health and well being.

and fats and oils. The second index was the Food Group Index-8 Restricted (FGI-8R), which essentially was similar to the first one, only that a child was considered having eaten food from a food group if they had eaten at least 10 g of the food except for fats and oils where the 1 g cut-off was used. Diet quality was based on how well the complementary foods met nutrient density recommendations calculated at amount per 100 kcal of complementary food. A nutrient density adequacy score (NDA), representing the desired nutrient densities was calculated by dividing the required amount of each nutrient from complementary food by the appropriate complementary food energy requirement for each age group expressed as percentage. This was done for each of the nine so called “problem” nutrients (vitamins A, B6, thiamine, folate, riboflavin, vitamin C, iron, zinc, and calcium). A mean nutrient density adequacy (MNDA) was calculated as the average of all nine individual NDAs for the day as a percentage. Bivariate analysis was carried out to test associations between dietary diversity indicators and MNDA for all the four data sets. Sensitivity and specificity analysis tests were conducted to compare performance of dietary diversity indicators with low and high MNDA and for each set, 2 cut-off points of MNDA were used –  $MNDA < 50\%$  and  $\geq 75\%$ .<sup>91 92</sup>

The analysis of feeding frequency used three data sets – except Ghana which did not have adequate information. Using correlation analysis, tests of associations between total energy intake (energy from complementary foods) and number of feeding episodes (including meals and snacks or just meals), were established. Analysis of sensitivity and specificity was also run to assess performance of the feeding frequency indicators in separating children with total energy intake above or below their age specific requirements, and to obtain the best cut-off points. The results of this study concluded that diet diversity was correlated with diet quality for all data sets with mean MNDA increasing with increased dietary diversity with strong statistical significance (correlation co-efficient 0.37 to 0.74). There was no classification difference nor higher sensitivities or specificities between the 10 g and 1 g cut-off and the researchers concluded and recommended that the simpler 1 g limit – equivalent to any or none for consumption be used for practical purposes. The best cut-off points however varied with diversity indicator point of MNDA, as such further research with other age groups was recommended.<sup>89</sup> As far as feeding frequency was concerned, the study concluded that feeding frequency was correlated with total energy intake as well as energy from complementary foods. Association between total energy intake from breastfeeding plus complementary foods was weaker than total energy intake from complementary foods alone.<sup>89</sup>

In a similar study, a multicounty validation study of diet quality indicators conducted in urban Madagascar determined how well dietary diversity scores (DDS) predicted diet quality of children aged 6 to 23 months. It also assessed whether the diet quality prediction improved by changing the food groups included and by introducing a minimum amount restriction.<sup>93</sup> The methodology was more or less the same as the four country study highlighted above.<sup>89</sup> The main difference was that four diversity scores were used – two based on eight and seven food groups respectively, with the seven food group excluding fats and oils, and two using a 10 g

minimum restriction on food groups. Correlation and regression were used to describe the relationship between the four diversity scores. The results showed that all scores correlated with MNDA, with stronger correlation when fats and oils groups were omitted for breastfed children. Similarly, there was little improvement with the 10 g minimum. The results further proved that dietary diversity scores were useful in predicting dietary quality specifically among infants and young children.<sup>93</sup>

One study which sought to assess the usefulness of an Infant and Child Feeding Index (ICFI) as an analytical tool for measuring child feeding practises studied the association between complementary food energy intake and average micronutrient density adequacy (MNDA). It also tested whether ICFI and its components were associated with length-for-age z-score (LAZ) amongst children aged 6 to 23 months in urban Madagascar.<sup>93</sup> The results indicated that ICFI was correlated with complementary food energy intake, MNDA and LAZ among children aged 6 to 8 months but this was slightly different with all ages combined. The researchers concluded that ICFI could be a useful tool for assessing diet quality but had to be constructed according to its final use, which should be adapted to each context.<sup>93</sup>

In Ethiopia, researchers sought to assess both predictive ability and seasonal stability of DDS in assessing dietary quality.<sup>94</sup> Amongst breastfed infants 24-hour dietary recalls were used at harvest and pre-harvest seasons. DDS was calculated based on seven food groups, while the MNDA was calculated using eight food groups. Multiple linear regression models were used to assess the associations between DDS and MNDA in the two seasons, with a receiver-operating distinguishing curve used to derive DDS cut-offs that maximised sensitivity and specificity. The results indicated that DDS was correlated with MNDA. The study therefore concluded that DDS is a good predictor of dietary quality amongst breastfed infants and supported other earlier recommendations for the use of DDS in measuring dietary intakes of micronutrients by breastfed infants in various seasons.<sup>93</sup>

To summarise, a recent analytical study sought to diagnose the accuracy of DDS as a measure of nutritional adequacy, and to describe the values of dietary diversity for human health and the sustainability of ecological functions.<sup>95</sup> The researchers used data from literature published since 1980 and standard methods of calculating nutritional adequacy based on nutrient composition of various foods and the nutrient requirements of different age, gender and physiological status of different people. It also employed the wealth of knowledge accumulated from relevant experiences, paying particular attention to varying contexts influencing DDS, standardisation challenges and problems with forfeiting the measure of food intake and interpretation of results validation. The results concluded that the use of DDS as a standard measure of nutritional adequacy is hindered by the inconsistency of nutrient concentration in various foods as well as the intricate influence of sociodemographic, economic, environmental, as well as technological characteristics. The researchers further concluded that dietary diversity increases likelihood of providing

various nutrients and healthy non-nutritive components such as phytochemicals. In addition, dietary diversification contributes to healthy ecosystems through primary production, nutrient cycle, food provision and environmental regulation – water purification, waste management and, climate regulation. As such, it was recommended that DDS be used as an indicator of healthy food with ecological benefits. Indicators including food groups such as energy sources (cereals, tubers, roots), protein sources (pulses, solid food of animal origin), mineral sources (pulses other legumes), vegetables, other food of animal origin, milk and vitamin sources (vegetables, fruits and solid food of animal origin) could be recommended as an indicator of a healthy diet. A cut-off of four food groups was therefore recommended for a healthy diet.<sup>93</sup>

## **2.5 Nutrition and health behaviour change**

Many of the changes required to improve nutrition status are correlated with change in behaviour and practises related to food consumption, food preparation, and child feeding and caring.<sup>96 97</sup> Human behaviour is complex and is often influenced by many external and internal factors that are often interrelated.<sup>98</sup> For instance, a mother's decision to change child-feeding practises is not influenced by cognition alone but by many other factors including motivational, social and environmental factors.<sup>99 100</sup> Some of these ecological factors are beyond the mother's control, such as the price of food on the market, availability of healthy foods on the local market and access to health services. In addition, some inherent practises are performed automatically and are due to habits and traditional and socially construed norms and culture. These often affect behaviour significantly.<sup>99</sup> Behaviour change therefore, is a long term, laborious effort that requires more attention and support that goes beyond just passing on messages.

### **2.5.1 Health behaviour change theories**

In an effort to design and support effective behaviour change interventions, many authors have, over the last three decades, developed a number of theoretical frameworks to help explain behaviour change and its predictors.<sup>101</sup> Several other behaviour change research studies have proved that interventions that apply behaviour change theories were more successful in influencing the intended changes than those without theoretical frameworks.<sup>98</sup> Some of the most commonly used health behaviour change theories are discussed below.

#### **2.5.1.1 The health belief model<sup>102</sup>**

This model is commonly used in preventive health interventions and general health promotion, such as breastfeeding promotion, disease prevention and management. It focuses on individuals' attitudes and beliefs about behaviour. According to this theory, people will only change behaviour if they feel that the benefits far outweigh the perceived barriers or costs associated with adopting the promoted behaviour. Four

concepts anchor this theory, and these are; perceived susceptibility to the effects of the poor behaviour, perceived severity of the consequences, perceived benefits of the promoted behaviour in addressing the consequences, and finally the perceived psychological barriers to change. Because this theory assumes that people's beliefs and attitudes alone determine their behaviour, this theory disregards complex systems of cognitive and non-cognitive enablers and barriers to behaviour change, such as the environment, socio and economic factors, habits, norms and emotions.

### **2.5.1.2 The diffusion of innovation theory<sup>103</sup>**

This theory is mainly used in public health behaviour change interventions. According to the diffusion of innovation theory, behaviour change in a community or social system follows an adoption pattern and five distinct adopter types. These include early adopters, otherwise known as innovators, those people who quickly adopt any new interventions or practises without hesitation. The last group are the late adopters, also known as laggards, the last people to adopt new behaviours, practises or technologies. The decision to adopt or reject promoted behaviours is determined by five main factors: perceived complexity, compatibility, observability, trialability and relative advantage. This theory however, does not consider the need for individual resources or social support to enable behaviour change.

### **2.5.1.3 The social cognitive theory<sup>104</sup>**

This theory, also known as Bandura's Social Cognitive Theory, is used in many health promotion interventions and suggests that people are more driven by external factors than internal factors. It further proposes that people's behaviour is influenced by intrinsic interaction of behaviour, and personal and environmental factors, often known as "reciprocal determinism". The environmental factors are the various situations and ecological influences on behaviour, while the personal factors have to do with feelings, instincts and other inherent motivational factors. According to this theory, there are several variables at play in influencing behaviour change. These include perceived self-efficacy (ability to perform the behaviour), outcome expectation – individuals' judgement of the likely consequences of the behaviour, self-control, reinforcements – aspects increasing or decreasing the probability of behaviour, ability to cope with emotional incentives and observational learning – issues to do with behavioural acquisition through observing and learning from other people.<sup>105</sup> The main disadvantage of this theory is that it does not consider people's motivations or emotion as predictors of behaviour. It focuses on the ever changing and mutual interaction between individuals with experiences, environments and behaviours.

#### **2.5.1.4 The trans theoretical (stages of change) model<sup>106</sup>**

This theory is commonly used in personalised health behaviour change interventions such as promoting dietary changes. It proposes transformation in six steps, starting with pre-contemplation where people have no intention whatsoever to change, followed by the contemplation stage where there is intention to change but not immediately. In this stage people are aware of both the advantages and disadvantages of change. The third stage is preparation, where people have a plan to change soon. The fourth stage is action, where behaviour change happens, followed by maintenance where efforts to avoid relapse are made. The last stage is termination where individuals have full (100%) adoption and efficacy and will sustain the adopted behaviour change. This theory assumes that individuals make logical decisions at each stage of the behaviour change process and it does not consider social context and its influence on individuals. It also acknowledges that change is slow. To be effective, this approach needs to address each behaviour change stage separately.

#### **2.5.1.5 The theory of reasoned action/planned behaviour<sup>107</sup>**

This theory is used in preventive health behaviour change interventions and evaluation studies, such as promoting hand-washing. According to this theory, intention (cognitive readiness) to perform behaviour is the main predictor of behaviour. This intention is determined by a person's attitude towards the behaviour, subjective norms (including social pressures and willingness to comply) and perceived behavioural control. The main disadvantages of this theory are that it does not consider other ecological, social, economic, emotional or habitual contributing factors of intentions and behaviours. It assumes that behaviour is the result of a linear process and does not consider changes over time. It also does not link intentions to behavioural action.

#### **2.5.1.6 The socio-ecological model<sup>108</sup>**

Just like the social cognitive theory, the socio-ecological model is used generally in health promotion interventions. It places behaviour change influences on several levels, including an individual level, interpersonal level, organisational, communal and public policy levels. It also focuses on the idea that, behaviours shape and is shaped by the environment. The main disadvantage of this theory is that its use is not well articulated.

As reviewed above, the various health behaviour change theories and / or models address various determinants of behaviour such as social, habitual, cognitive, ecological and cultural. There is not one theory or model that manages to capture all facets of influence on human behaviour. As such, behavioural scientists recommend that interventionists and researchers employ multiple behaviour change theories to fully capture intricacy and levels of behaviour change in designing and evaluating behaviour change

interventions.<sup>98 99</sup> It is further recommended that large scale health and nutrition interventions draw on both individually oriented models to select effective techniques and ecological theories/models to address the effects of environments on behaviour change.

One review of commonly used behaviour change methods used in low-income countries identified six techniques as effective in prompting behaviour change supporting sustained maintenance of the adopted behaviour.<sup>108</sup> These six techniques are summarised in Table 2.1. This review indicated that successful behaviour change interventions apply techniques from a minimum of three diverse kinds, with most of the interventions incorporating provision of information as an integral component. Other researchers identified that the application of various techniques influences different psychological aspects of behaviour change such as social, cognitive and habitual, thus enhancing the learning experience and probability of adoption and active recall of the promoted behaviour.<sup>109</sup> Another review of health and nutrition behaviour change interventions, focusing on the linkages between behaviour change theories and techniques, identified that most interventions were designed without any underlying behaviour change framework or theory. In addition, they had no link between the underlying behaviour change theory and techniques proposed or used to change behaviour.<sup>98;110;111;108</sup>

Table 2.1: Common health behaviour change techniques. <sup>108 , 110</sup>

Technique	Targeted psychosocial process	Characteristics
<b>Provide information on the promoted behaviour</b>	Cognitive (mental)	Information on the source/causes of nutritional/health problem and instructions on how to improve behaviour.
<b>Try out or perform the desired behaviour</b>	Behavioural	Demonstration of appropriate behaviour in practise to community (e.g. preparation of complementary foods).
<b>Solving problems associated with practising the behaviour</b>	Cognitive	Identification of context specific barriers to adoption of promoted behaviours with the community and ways to overcome them.
<b>Provide community social support systems</b>	Social	Advocacy and support for behaviour throughout the entire community (e.g. peer support, community-based organisations such as churches, religious leaders).

<b>Provide material resources to support the promoted behaviour</b>	Sensory	To incentivise participation in the intervention, to provide cues for the behaviour, to give examples to the community.
<b>Use various media</b>	Sensory and social (for small-scale media)	Both are channels of information delivery and a way to discuss behaviour during personal interaction (e.g. pictures, drama, and theatre).

Adapted from<sup>112</sup>

### 2.5.2 Application of behaviour change theories and techniques in nutrition programming

Ten core interventions have been identified as highly effective in addressing maternal and child nutrition and behaviour change is significant to all of them<sup>112</sup>. This is because the required improvements in nutrition have to do with practises informed by social norms, culture, environments and social systems. Some of the practises that require change that is critical in child health and nutrition have to do with breastfeeding – early initiation, exclusive breastfeeding for the first six months, and timely introduction of complementary foods, optimum complementary feeding and continued breastfeeding until the age of two years. Exclusive breastfeeding alone is associated with reduced risks of gastrointestinal and respiratory infections, all causes of mortality, especially in poor and unhygienic settings.<sup>113</sup> Similarly, optimum complimentary feeding should be timely introduced at six months with continued breastfeeding. Complimentary foods should be fed a minimum number of times for age, consisting of at least four out of seven food groups and fed with love.<sup>114</sup> Poor complementary feeding practises have been associated with poor nutrition outcomes in children, including both underweight and stunting.<sup>115</sup> It is also associated with delayed achievement of developmental milestones particularly due to the lack of responsive feeding.<sup>116</sup>

Basic hygiene and handwashing have been identified as another set of highly effective interventions in addressing maternal and child nutrition.<sup>117 118</sup> Studies have shown that good hygiene practises such as handwashing can reduce incidence of diarrhoea by up to 40%, as well as respiratory and eye infections.<sup>119</sup> Some studies have gone into more detail, suggesting that hand washing is one of the most cost-effective approaches to reducing the global burden of diseases.<sup>120</sup>

Nutrition education and communication provision has been used to improve both the supply and demand for high-value vegetables, fruits, legumes, fish, and livestock products. Nutrition knowledge among farmers can be an additional incentive for farmers to diversify their production models to include nutritious, high-value crops, beyond the common agriculture related reason, such as to reduce risks associated with weather, biotic stress, or price shocks. Nutrition knowledge among consumers can substantially increase the demand for high-value nutritious products, and increase the income for farmers who grow them. For example, a



Kenyan Civil Society Organisation (Farm Concern International) won a World Bank Consultative Group for Assistance to the Poor (CGAP) award for its approach of nutrition-focused marketing of African leafy vegetables. This approach drove up the value of these horticultural products 213% in five years, substantially increasing incomes and interest among farmers in growing them.<sup>121</sup>

Nutrition education has been shown to enhance dietary consumption effects, as well as the potential for consumer demand. While increased production of nutritious foods may have some independent impact on dietary consumption and micronutrient status, reviewed evidence showed that nutrition education concerning those foods strongly enhances the effect.<sup>122</sup> Policy initiatives, which empower consumers to demand better diets, are needed to help transform agriculture and food systems to provide not just food but appropriate nourishing to populations.<sup>123</sup>

A review of food-based approaches to reduce iron and vitamin A deficiency found that only those food-based interventions that had education, social marketing, or mass media demonstrated an impact on nutritional outcomes.<sup>124</sup> These studies focused on household-level production and consumption. The effect of price changes on the consumption of nutritious foods in the absence of education has not been well studied in low-income contexts. However, nutrition education has been shown to affect the allocation of household food budgets and to reduce price elasticity of demand for foods rich in micronutrients.<sup>125</sup> Inappropriate infant feeding and care practises contribute to malnutrition. Behavioural interventions can improve nutrition of infants and toddlers.<sup>126</sup>

Food security is a basic requirement for the success of educational interventions to improve caring practises of infants by providing caregivers the skills and motivation to improve infant diet and engage in responsive feeding.<sup>127</sup> This is mainly because while poor knowledge is understood as a key factor contributing to poor infant and young child feeding, a significant proportion of households in the smallholder-farming sectors such as in Zimbabwe still lack access to basic food to meet their daily food requirements. In addition, food security has been reduced to mean cereal adequacy and most of the households termed food secure in national assessments only have adequate cereal (maize) to meet their energy requirements for the consumption year. Further work is needed to test additional strategies to achieve behavioural change for improving dietary diversity and increased quantities of locally available foods, particularly animal food sources, in this age group.<sup>128</sup>

Two studies sought to address the barriers and facilitators of changing practises related to healthy eating amongst Bangladeshi mothers and rural American women. The findings of these studies both noted that shortage of time, money, and simple inconvenience were reasons why mothers did not change their practises. Food and feeding were performed within the family setting and food preparation competed with

other household chores.<sup>129 130</sup> While these women fully appreciated the benefits of healthy eating, other ecological factors were at play in preventing practising the appropriate behaviour. Thus, having in-depth knowledge about one's audience was important for picking the most suitable message. Both studies noted that family members were influential in supporting or hindering changes. As such, cognitive determinants by themselves when targeted were not sufficient to change practises.<sup>131 132</sup>

## 2.6 Food demand

In economics, food demand can be defined as a consumer's desire and willingness to pay a price for a specific food. Investopedia further defines it as the willingness to buy certain foods, while market demand is the products that most consumers require. The elasticity of food demand is affected by many factors including the price of the food – the higher the price, the lower the demand; the price of related foods – that is those foods that are related to the food either as complements or as substitutes, the personal disposable income – in most cases the more the income, the higher the likelihood to buy, tastes or preferences, and the nature of the food – whether it is deemed a basic food type.

One study investigated how individual health values influence interest in healthy foods, positive outcome expectations, hedonic expectations, and behaviour intentions. The study administered close to 1200 individual questionnaires to restaurant customers who had consumed a healthy menu at a casual restaurant. The results indicated that health value was the key element that inspired customer interest in healthy eating and aroused hedonic and positive outcome expectations, which in turn enhanced intentions to purchase healthy food items.<sup>133</sup> Another study employed the Value-Attitude-Behaviour hierarchy model which explains the influence of value on customer attitudes and behaviours toward a food product.<sup>134</sup> The study suggested that healthy food values are organised in a cognitive hierarchy, in which values influence behaviour indirectly through attitudes. Subsequent studies further revealed that internal values (such as culture and religion) exert power on one's decision in life such as what food to eat and where to shop. Internally oriented customers are more concerned about nutrition than externally oriented customers and thus, resulting in more careful choices when purchasing food items.

Health value plays a significant role in motivating people to maintain health state and influence their decisions to perform specific actions to maintain or improve their health. The extent to which people value their health is the key determinant for healthy food choices. The more highly people value their health the more likely they are to choose healthy foods. Increased health concerns enforce the need for healthy food on the market.<sup>135</sup>

## 2.7 Conclusion

From the literature review presented in this chapter, it can be concluded that agriculture is vital to improving nutrition, particularly in rural communities where people rely mostly on what they produce for consumption. Diversifying agriculture production to ensure provision of a wide variety of safe wholesome foods can go a long way towards addressing many nutrition and health problems in poor communities. Assessing dietary quality can provide a proxy to estimating the nutritional status of individuals, particularly using the various dietary diversity indicators. Behaviour is a key determinant to addressing malnutrition in communities. Knowledge alone is not sufficient to bring about change in practise. There are many barriers to practises that people need to overcome to adopt certain behaviours and unless these are addressed, behaviour change is impossible. Behaviour is influenced by many factors; including attitude, cognition, the audience, social and community support systems, the environment culture and religion. Use of various theoretical frameworks, and techniques in BCC activities is essential to promote behaviour change; hence BCC activities need to be structured, contextual and deliberate. Finally, individual health values are a key determinant for food demand.

## Chapter 3: Methods

### 3.1 Introduction

This chapter will describe sample selection and size, methods of data collection, data collection techniques, data analysis, validity, and reliability for each of the seven data collection phases employed. It will then end by describing the ethical considerations and the pilot study, which preceded the whole data collection process. All this will be preceded by a general description of the study population.

### 3.2 Study design and methods

The aim of the study was to evaluate the effectiveness of nutrition BCC by the LFSP in increasing the demand for diverse and nutritious foods by smallholder farming households in the Makoni district and the influence of social, cultural and market factors on this demand. An observational and cross-sectional design was followed, using both quantitative and qualitative data gathering techniques. The study sought an in-depth understanding of knowledge, behaviour and practises of food consumption. The influence of the LFSP on these, the factors affecting them as well as participants' perceptions of the intervention was also investigated. The study adopted a phenomenology with ethnographic considerations qualitative approach.<sup>136</sup> Unlike quantitative research, qualitative inquiry employs different philosophical assumptions, strategies of inquiry, and methods of data collection, analysis and interpretation. A qualitative approach emphasises the qualities of entities, processes and meanings that are not experimentally examined or measured in terms of quantity, amount, intensity or frequency.<sup>137</sup>

### 3.3 Study population

The population studied were smallholder communal farming households living in the Makoni rural district of the Manicaland province, east of Zimbabwe. The study focused on households with men, women of child bearing age and children aged 6 – 23 months. These households were participating in the LFSP-INSPIRE intervention, hereafter referred to as the intervention, which is an agriculture value chain intervention aimed, among other things, at increasing the demand for diverse and nutritious foods among target households. The intervention covered 30 out of the 35 administrative wards in the district. Figure 3.1 shows a map of the Makoni district.

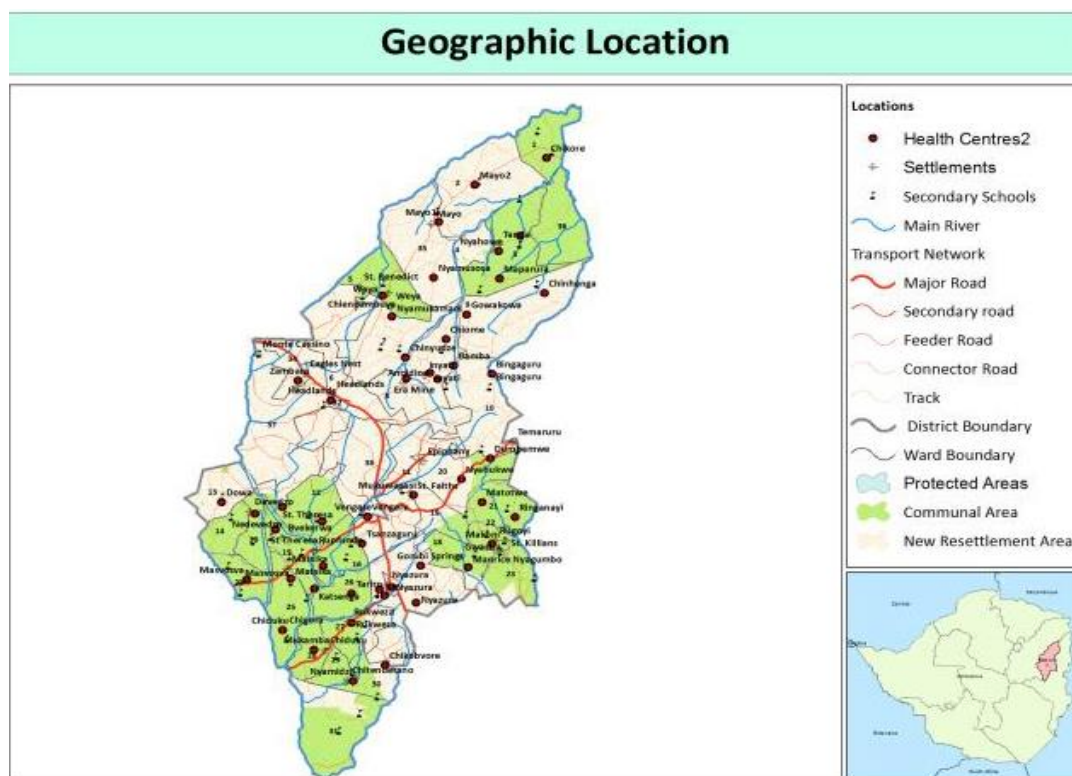


Figure 3.1: Makoni District of Manicaland Province in Zimbabwe. Adapted from UNOCHA, 2013.

The study population was spread over two main agro-ecological regions (AER): region 2b and region 3, reaching a total of approximately 18 000 smallholder farming households. The LFSP-INSPIRE was not reaching any farmers in AER 4 of the district, therefore those communities were not included in the study. Within the two AERs covered by the intervention, there was a mixture of 2 settlements – the traditional communal areas and the new resettlement areas. Figure 3.2 shows the distribution of AERs in the district.

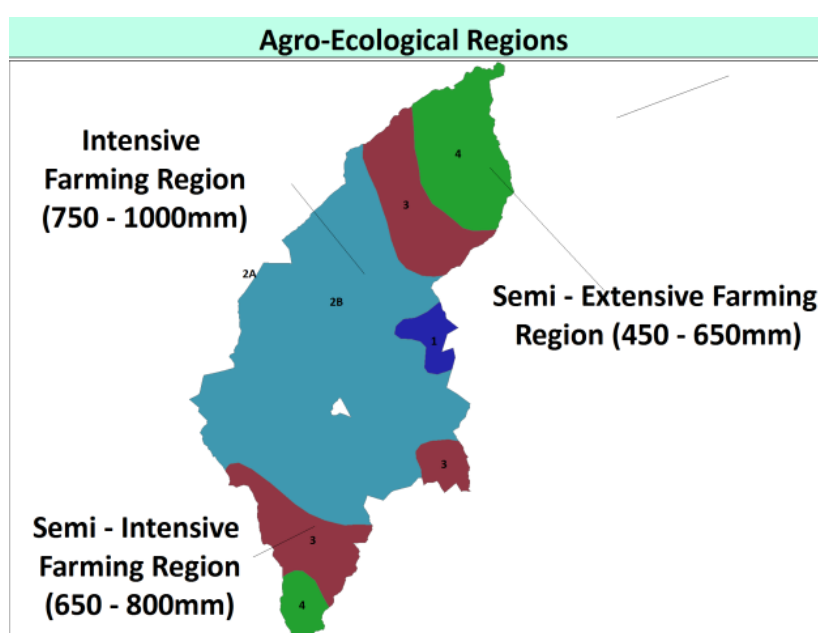


Figure 3.2: Agroecological regions in Makoni District. Adapted from UNOCHA, 2013.

AER 2b in Zimbabwe receives an average medium rainfall of between 750-1000 mm per year during the period November to March/April. Temperatures are not too extreme, and soils are generally good. AER 3 receives low average annual rainfall of between 500-750 mm per year with mid-season dry spells and high temperatures. These distinctions have an impact on the type of crops that can be grown in the two areas, which can have an impact on consumption patterns of their inhabitants. For this reason, the district was stratified by AER for the purposes of sampling participants for the study.

The Makoni district is prone to several hazards, which limit agriculture production yearly. These hazards include erratic rainfall, crop pests especially armyworm and quelea/weaver birds, livestock diseases (red water, heart water, black leg, fowl pox and Newcastle). The district poverty rate was at 66.1% according to the Zimbabwe hazards mapping by the United Nations Development Intervention (UNDP).<sup>138</sup>

One main ethnic group is found in the target population, the Manyika, a dialect of the Shona culture. Crop production is the main livelihood source of most households targeted by the LFSP-INSPIRE. The main field crops grown in Makoni are maize, groundnuts and tobacco. Vegetables like tomato, onion and leafy vegetables are also grown in gardens, mainly for household consumption and sale should there be a surplus. Women are mainly responsible for subsistence farming in the households. Indigenous chickens, cattle and goats are the livestock commonly produced by people in the LFSP target households in Makoni.

### **3.4 Data collection procedures**

A desk review of secondary data from the intervention reports and documents was conducted to establish the baseline status of the study population as well as the strategies and activities undertaken by the intervention. As a way of triangulating information from the reviewed reports on methods used for delivering the intervention activities, key informant interviews were conducted with randomly selected intervention officers working in the areas where Focus Group Discussions (FGD) was active, and in-depth interviews were conducted to establish the activities undertaken by the intervention to promote demand for varied diets and perceptions on their effectiveness.

This was followed by both quantitative and qualitative assessments of sampled participants using in-depth interviews and FGDs, to obtain the post-intervention status of participants at the time of data collection and the influence of the intervention on their food consumption patterns. A market observation was also carried out to assess the availability, range and quality of foods on the local markets, the factors affecting the supply of food on these markets and the perceived ability by the market players to supply diverse foods throughout the year.

### **Situational analysis using desk review of intervention documents**

A desk review of the LFSP-INSPIRE intervention documents was conducted to: establish the participants' status prior to the intervention, identify the nutrition BCC activities planned and conducted, and assess the intervention's progress as reported in intervention reports.

#### **3.4.1. Situational analysis sample selection and size**

The desk review of the LFSP baseline data for the Makoni district and inception reports purposefully served to provide baseline characteristics of the population before the intervention and offered an insight into the behaviour change strategies employed by the intervention. It also provided detailed information about the study population prior to and at the beginning of the intervention. This would help in appropriately attributing any changes noticed in the population.

##### **3.4.1.1. Inclusion and exclusion criteria**

The desk review included sampled LFSP participants in Makoni district and excluded anyone who was not participating in the intervention or was living outside the district. Because this was a secondary analysis of data, only participants included in the sampling of the intervention baseline survey and other intervention reports and information documents analysed were included in the sample.

##### **3.4.1.2 Situational analysis data collection methods and techniques**

A desk review checklist (Addendum 1) was designed to facilitate the review of data from various intervention documents analysed. The information collected included:

- Demographic description of the sampled study population,
- Livelihood sources and coping mechanisms,
- Agriculture production patterns and food sources,
- Baseline food and nutrition security status,
- Baseline nutrition knowledge, attitudes and practises,
- The BCC methodologies employed by the LFSP to promote/increase the demand for nutritious foods.

The following documents were obtained for review, both from the LFSP-INSPIRE intervention and from FAO:

- The LFSP-INSPIRE Final intervention proposal,
- The Makoni district profile,
- The LFSP-INSPIRE baseline assessment report,
- The overall LFSP baseline survey report by Coffey<sup>6</sup>,
- The LFSP-INSPIRE ENIPPA methodology documents,

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<sup>6</sup> Coffey is the overall LFSP M&E Technical partner responsible for the intervention's monitoring and evaluation

- LFSP-INSPIRE annual progress reports for 2015 and 2016.

These documents were analysed to extract background information about the LFSP-INSPIRE intervention. This information was used to characterise the research population prior to the intervention as well as understand the intervention design and strategies used to create demand for diverse and nutritious foods.

#### **3.4.1.3 Analysis of desk review data**

Data from the desk review was already in a state that could be synthesised and reported. This gave information on the baseline status of participants before the intervention. It also provided an in-depth understanding into the processes and activities done by the intervention to try and promote demand for diverse and nutritious foods to the study population.

#### **3.4.1.4 Validity and reliability**

The desk review was one of many methods used to gather data to inform this study. Mixed method approaches (triangulation) have risen to prominence since they can simultaneously gather, analyse and interpret both quantitative and qualitative data. Using different types of procedures for data collection and obtaining information can augment the validity and reliability of the data and its interpretation. It allows researchers to triangulate the data hence increasing its dependability, trustworthiness and subsequent interpretation.<sup>139</sup> Past intervention data was collected and analysed through a review of intervention reports and processes. This allowed the researcher to have insight into the status and situation of participants before the intervention. It also allowed the researcher to understand, in a little more detail, the study population prior to working with them in the data collection process. This allowed refinement of the data collection tools to ensure they collected data intended to be collected (validity). It also allowed the researcher to understand the intervention, particularly the nutrition BCC methodology used and its rationale.

Reliability (truthfulness) is concerned with consistency, dependability and replicability of the results obtained from research.<sup>140</sup> To help increase reliability of the research, the researcher elaborated all processes and procedures leading to the final conclusions, including a detailed description of the study rationale, design and sampling. The researcher also used different data collection methods for triangulation and fully described data collection procedures, data analysis, and how various themes were derived, and results obtained. The desk review was one of the methods of data gathering used for the study.

#### **3.4.2 Assessment of nutrition BCC activities implemented by the LFSP-INSPIRE intervention**

KII were conducted to understand the intervention activities for nutrition BCC, determine officers' perceptions on the intervention effectiveness and to identify any key challenges experienced during the



intervention that could have affected achievement of its objectives and how they were addressed. Data collected through this process would verify information obtained from the situational analysis through the desk review study of intervention documents highlighted in section 3.3.1.

#### **3.4.2.1 KII Sample selection and size**

Five KII (n=5) were conducted with intervention personnel participating in the LFSP in the Makoni District. Purposive random sampling was used to select personnel supporting the intervention in the district. An intervention staff member was interviewed in each of the four areas where FGDs were later conducted. To select this person, all the names of the personnel (NGO field officers and government community workers) working in the area who were present on the day of the FGD were put into a hat and one name was selected as a key informant. The fifth staff member was randomly selected from the list of NGO intervention staff supporting the intervention at the district level.

#### **Inclusion and exclusion criteria**

Only the intervention staff included in the implementation of the intervention was considered for interviews. These included either NGO intervention staff or government community workers, environmental health technicians (EHTs), agriculture extension officers (AEOs), or village health workers (VHWs) working closely with the intervention in the respective wards. Two EHTs and three NGO intervention staff members were interviewed as key informants.

#### **3.4.2.2 KII data collection techniques and methods**

An interviewer administered a key informant interview questionnaire (Addendum 2) which was designed to collect data from the selected intervention staff. These people were involved in the implementation of all of the intervention activities. The objective of this data collection method was to verify the actual nutrition BCC activities conducted and comprehend how well these were done, any challenges faced and get the officers' perceptions about the intervention and how well it managed to increase the demand for nutritious foods amongst households, women and children. The KII questionnaire especially sought to determine the:

- Behaviour change activities undertaken,
- Intervention coverage,
- Challenges faced during implementation and how they were resolved,
- Perceptions on intervention effectiveness,
- Influence of culture on practises related to food consumption,
- Nutrition knowledge and perceptions,
- Perception on demand for nutritious food amongst the intervention beneficiaries as a result of the intervention.

Five KIIs were conducted with intervention officers working with the groups selected for FGDs. Following the selection of groups to participate in FGDs in Nyamidzi, Rukweza, Nyahukwe and Mayo 1 areas, the NGO staff and government agriculture and health extension officers working with these groups were identified and randomly selected one name from each of the four areas. Once a name was selected, the officer was called to organise a meeting.

During the meeting, the officer was given the information sheet to familiarise themselves with the study, together with an explanation of the study objectives and signing of the consent form. All the selected officers accepted to participate in the study. The principle investigator (PI) administered the KII questionnaire.

#### **3.4.2.3 KII data analysis**

Most of the questions in the KII questionnaire were open ended, except for the first five questions, which sought to identify and characterise the informant. These close ended questions were analysed using Microsoft Excel. The open-ended questions were coded then frequencies were run to describe the responses. The KII results verified the information on the intervention activities obtained through the desk-review and highlighted any changes that transpired during intervention delivery.

#### **3.4.2.4 Validity and reliability**

To ensure validity, the KII questionnaires were pre-tested during the pilot study (outlined in section 3.6) to ensure questions were understandable and applicable to the study population. The data collection tool was administered by the researcher to enable noting and recording of any non-verbal cues and to probe for clearer explanations where responses were not clear.

To ensure external reliability, which is concerned with replicability of the study, standard documented procedures were followed.<sup>140 141</sup> The selection of all the informants and participants was clearly described and outlined so that it can be followed up successfully. Similarly, all methods of data collection and analysis were clearly described and documented.

#### **3.4.3 Socio-demographic characterisation of participants**

The objective of this step was to obtain socio demographic parameters of their households, establish the households' food security status, household dietary diversity and dietary diversity of women of child bearing age (15 – 49 years) and children aged 6 – 24 months. The in-depth interviews also sought to identify any consumption pattern changes as a result of the intervention, participants' perceptions about the intervention's effectiveness, barriers and enablers for optimum food consumption.

### 3.4.3.1 Sample selection and size

Purposive random sampling was used to select participants for in-depth interviews. This process started with purposive selection of active nutrition BCC groups, followed by random selection of members from the selected groups, also taking into consideration accessibility of the participant's household. All women interviews were conducted with women caregivers of children in the age group 6 – 24 months. Due to the difficulty in identifying these women, several efforts had to be made to select the right candidates. However, this was not always successful, as a result in a few instances where women with children slightly older than 24 months ended up being interviewed. All interviews were conducted at the participant's household. A random selection of 15 women and 5 men (n=20) were made from the two clusters – agro-ecological region 2b and 3. The total sample size for in-depth interviews for the two AERs was 40 (n=40).

This sample size was considered large enough to assess an appropriate amount of diversity or variation that ensured credibility, but statistically small enough to reach saturation or a redundancy point. In both clusters all 20 planned interviews were conducted before saturation was reached and up to a point where many common themes were mostly recurring.

#### Inclusion criteria

The study included all participants in the LFSP-INSPIRE intervention in the Makoni Rural District as follows:

- People residing in either agro-ecological region 2b or 3 as indicated in the agro-ecological regions map in Figure 3.2,
- People residing in the 30 wards covered by the intervention in the district,
- All individual participants whose households were accessible to the researcher during the data collection period,
- All participants speaking Shona or Manyika dialect and had participated in the intervention for at least 6 months,
- Individuals who agreed to sign the informed consent forms (Addendum 3&4) and were willing to participate in the study.

#### Exclusion criteria

The following people or groups were excluded from participating in the study:

- People that were not in any way participating in the LFSP-INSPIRE intervention,
- People residing in wards outside those covered by the LFSP, including those residing in agro-ecological region 4,
- Participants who refused to sign the informed consent forms and refused to participate in the interviews for any reason,

- Groups or individuals residing in areas that were not easily accessible to the researcher, either due to poor, water-logged roads or where travel arrangements reduced efficiency of data collection.

#### **3.4.3.2 Data collection methods**

Quantitative and qualitative data collection techniques were used.

##### **Data collection instruments**

Two in-depth interview questionnaires (Addendum 5 and 6) were designed to facilitate data collection from male and female participants separately. Quantitative data, to compute the following indicators, was collected: household food security, household dietary diversity score (HDDS), household food consumption score (HFCS), Minimum Dietary Diversity for women (MDD-W) and for children 6 – 23 months (MDD). Other quantitative data collected through the instrument-included data on household livelihood sources, household food production, and household demographics.

Qualitative data was collected through the same in-depth interview questionnaires, mainly through open-ended questions, assessing food knowledge, factors affecting household food consumption, barriers and enablers of optimum food consumption, and perceptions about the intervention's effectiveness in creating demand for nutritious foods.

The two male and female in-depth interview questionnaires were translated into vernacular – Shona, prior to administration and use (Addendum 7 and 8). The PI was responsible for translation, after which an independent person was requested to back-translate the instruments to English to check for consistency before finalisation.

##### **Data collection techniques**

Forty in-depth interviews were conducted with 30 women and 10 men selected through purposive random sampling from the two study clusters. The Shona translations of the female and male in-depth interview questionnaires were used. The PI, with the help of the research assistant, administered the questionnaires. After random selection of interviewees and ascertaining that women participants had children aged 6 – 23 months or at most 36 months in their care, an interview was set. All interviews were conducted at the participant's household. Each interview started with establishing rapport with the participant, asking about general issues and ensuring the participant is settled and not anxious. This was then followed by an explanation of the purpose of the visit, which was briefly explained when an interview was set; with the help of the LFSP-INSPIRE intervention staff. An explanation of the study objectives was given, together with further details about the research process. Participants were assured of confidentiality and an explanation was given of how the information collected would be used as outlined on the study information sheet

(Addendum 9), which was also translated in Shona (Addendum 10). Participants could ask questions to clarify any issues before being asked to sign the informed consent form. All the selected participants accepted to participate in the study. Each interview took approximately 1 hour and all 20 interviews in a cluster were covered in 2 days.

Although a Shona questionnaire was used to ask questions, coding and recording of responses was done on an English questionnaire. Most of the questions on the in-depth interview questionnaires were pre-coded and quantitative with a few open ended, qualitative questions. Probing techniques, without leading the participants, were used to seek clarification and encourage the participant to provide more details, particularly for open-ended questions.

### **3.4.3.3 Analysis of in-depth interview data**

#### **Analysis of quantitative data**

The Statistical Package for Social Scientists (SPSS) was used to analyse quantitative data. A statistician in Harare provided technical support with data analysis.

Data analysis started with a review of all the questionnaires to check for obvious mistakes, completeness and identification of any data recording errors. All the quantitative questionnaires were pre-coded during development. The next step therefore involved data entry into Microsoft Excel whereby data was coded to identify the levels or scales of measurement as nominal, ordinal, interval or ratio. The data was then exported into SPSS for analysis. Running descriptive analysis then followed. Frequency tables were used to indicate the number and percentage of participants in each category, histograms showed the percentage of all participants falling into a category. Medians or means were used as the measure of central location for numerical variables.

The relationship between nominal variables – comparing frequency of different responses - was compared using contingency tables and the Chi-square test. A p-value of  $< 0.05$  represented a statistical significant difference between the areas. Data was disaggregated by gender and AER during analysis. No differences were identified between these categories and as such the data was reported together.

#### **Analysis of qualitative data**

The in-depth interview questionnaires also contained several open-ended questions. Analysis started by carefully typing out all responses from the questionnaires into Microsoft Word. This was then imported into N-Vivo, a statistical package for qualitative data analysis. Here common themes were identified and grouped. Frequencies of occurrence of common themes were identified, and the data was reported quantitatively. While analysis was disaggregated between the 2 AERs, no differences were identified between the two hence the data was reported as one set.

### 3.4.3.4 Validity and reliability

The quantitative questions enabled computing of numeric indicators to assess the households' food security status and nutritional adequacy of the diets they consumed. Open ended questions in the questionnaire allowed the researcher to obtain the participants' perceptions towards the intervention and whether they felt it benefitted them and influenced their food demand and consumption patterns. The fact that the researchers administered the questionnaires allowed the researchers to ensure participants fully understood the questions and gave responses useful to the evaluation. It also allowed measuring of attitudes and provided in-depth information both of which contributed to good interpretive validity.<sup>142</sup>

Validity in epidemiological research can be defined as the accuracy of the assessment, a measure of how close the study findings are to the truth or actual situation.<sup>143</sup> A valid instrument therefore measures what it is intended to measure. As such survey or data collection instruments should be applied in a standardised manner according to prescribed and validated procedures.<sup>144</sup> To help ensure this, quantitative questions were based on standard validated ways of collecting information to compute various indicators:

- The socio-demographic questions were based on the Zimbabwean statistics office standard way of asking in national assessments such as the national census and Zimbabwe vulnerability assessments.
  - Standardised and validated methods for assessing key indicators were used as follows:
  - The Household food insecurity access scale (HFIAS) was assessed based on the Food and Nutrition Technical Assistance (FANTA) guidelines.<sup>145</sup>
  - The Household consumption patterns and dietary diversity were assessed based on the FAO and WFP standardised methodologies for assessing household dietary diversity and food consumption.<sup>146</sup>
- <sup>147</sup>
- The minimum dietary diversity for the women assessment questionnaire was based on the FAO and FANTA guidelines<sup>148</sup>.

The minimum dietary diversity for the children questionnaire was based on the WHO and UNICEF indicator guide for assessing complementary feeding in children aged 6 – 23 months. Ref 71.<sup>149</sup>

In addition, the in-depth interview questionnaires were pre-tested during the pilot study (described in section 3.6) to ensure questions were understandable and applicable to the study population.

To ensure content validity of the data collection instruments, the in-depth-interview questionnaire was pre-tested before the actual data collection and corrections were made to ensure the intended information was collected. The research supervisor, who is qualified in the field, reviewed the data collection instruments.

To ensure internal validity, which is the resemblance of the research findings to the reality and the degree to which the researcher observes and measures what is supposed to be measured, the study employed the following measures:<sup>150</sup>

- Triangulation - using various data collection methods and procedures, namely the in-depth interview questionnaires, FGDs and observations.
- Avoiding researcher's bias – through ensuring impartiality during the data collection, analysis and interpretation. As much as possible, the research was explicit, critical and faithful throughout the study process. This was driven by the need to produce a study that has meaningful impact in the nutrition and agriculture development nexus. Ethical rules were strictly adhered to and the study was conducted as accurately as possible and all reporting done honestly.
- To ensure external validity, the whole data gathering process through in-depth interviews was clearly documented and outlined. Completed questionnaires were kept for further reference.

### **3.4.4 Assessment of participants' perceived benefits from the intervention**

FGDs were used to interrogate the participants' perceived benefits from the LFSP-INSPIRE intervention as far as demand for nutritious foods as assessed through food consumption patterns was concerned, as well as other aspects of nutrition behaviour change. The FGD guide also queried the factors affecting adoption of the promoted practises and behaviours. It is worth noting here that FGDs were conducted with a separate group of participants to the people who participated in in-depth interviews highlighted in section 3.3.3. However, these people were all LFSP-INSPIRE intervention beneficiaries residing in the same communities and environments.

#### **3.4.4.1 FGDs sample selection and size**

Maximum variation purposive sampling was used to select groups of women and men from the 30 LFSP-INSPIRE intervention wards in the Makoni District to participate in FGDs. Purposeful sampling is a technique widely used in qualitative research for the identification and selection of information-rich cases for the most effective use of limited resources.<sup>151</sup> This involves identifying and selecting individuals or groups of individuals that are especially knowledgeable about or experienced with a phenomenon of interest.<sup>152</sup> In addition to knowledge and experience, participants need to be available, and willing to participate, and be able to communicate experiences and opinions in an articulate, expressive, and reflective manner.<sup>153 154</sup> Maximum variation sampling is used to identify and increase the range of variation or differences. This is in a way similar to the use of quantitative measures to describe the variability or dispersion of values for a particular variable or variables.<sup>155</sup>

The study population was split into two groups (clusters) by AER - 2b and 3. In each cluster, two female and two male nutrition BCC groups were selected for participation in FGDs. However, there were no male only nutrition BCC groups in the intervention. As such, mixed groups were selected. In all but one case, the ratio of male to female participants was approximately 1:3 as shown in Table 3.1.

Theoretically, the sample size for a qualitative study is unlimited and discussion groups will continue until no more new information can be extracted.<sup>156 157</sup> The plan was to continue with discussions until a saturation point was met, but this was reached within the set samples for both clusters. A total of 23 men and 58 women participated in the FGDs in AER 2b in AER 3, bringing the total number of FGD participants to 81 (n=81).

Table 3.1: Sample selection of Focus Group Discussions

AEZ	Area / Ward	Name of group	Number of People in the Focus group (n)		
			Female	Male	Total
2b	1	Village A	10	3	13
		Village B	8	5	13
	2	Village C	7	3	10
		Village D	5	3	8
3	3	Village E	7	3	10
		Village F	6	2	8
	4	Village G	9	0	9
		Village H	6	4	10
TOTAL			58	23	81

Selection of these groups was done with the help of intervention personnel, considering the most active groups that were easily accessible to the researcher. Data collection was undertaken early January 2017, during a time when excessive rainfall was received in the study area. Some roads got severely waterlogged, making them largely inaccessible. Groups were selected in a manner that allowed wide coverage of the cluster. After the selection of a group, phone calls were made with the group leader to organise an appointment date and time. The group leader then liaised with group members before agreeing to participate in the study. If the majority of members agreed to participate in the study, an appointment was made, and group discussions conducted.

#### Inclusion criteria

The following people were included in the sample size determination of FGDs for the study:



- Participants' groups who were or had participated in the LFSP-INSPIRE intervention nutrition BCC groups (ENIPPA Circles) Cycles 1 or 2,
- All groups who were accessible to the researcher during the data collection period,
- Groups who agreed to sign the informed consent forms (Addendum 3) and were willing to participate in the study.

#### Exclusion criteria

The following people were excluded from participating in the study:

- People who were not in any way participating in the LFSP-INSPIRE intervention,
- People residing in wards outside those covered by the LFSP, including those residing in agro-ecological region 4,
- People who had not participated in nutrition BCC groups (ENIPPA Circles) cycles 1 or 2,
- Groups who refused to sign the informed consent forms and refused to participate in the discussions for any reason,
- Groups residing in areas that were not easily accessible to the researcher, either due to poor, water-logged roads or where travel arrangements reduced efficiency of data collection,
- In-depth interview participants,

#### 3.4.4.2 Methods of collecting data through FGDs

##### Data collection instruments

While two FGD guides were developed for women and men focus groups (Addenda 11, 12, 13 and 14) only the women's guide was used to guide discussions, as it turned out there were no male only nutrition BCC groups (ENIPPA Circles). The female FGD guide sought to collect the following information from the FGD participants:

General nutrition practises, how they had changed over the years and the causes/factors influencing these changes,

Factors affecting consumption patterns of different family members,

Translation of nutrition knowledge into practise and the factors influencing it,

The participants' general food preferences and factors affecting these,

Community aspirations regarding nutrition, health and personal development,

Barriers and enablers to practising optimum food consumption practises learned through the intervention.

##### Data collection techniques

FGDs were conducted with eight purposively selected nutrition BCC groups (ENIPPA Circles). The number of participants per group ranged between eight and thirteen members as shown in Table 3.1. All the ENIPPA Circle members came from the same village.

On the agreed appointment date, the PI and research assistants met with the group at their usual meeting place. To avoid bias, LFSP-INSPIRE intervention staff only helped with identification and setting up of appointments with groups but did not sit in on the meetings. The PI greeted the group members and verified their group name and a few details about the group as obtained from the intervention. After this, the PI explained the purpose of the meeting, which was to understand how the members perceived the benefits of their participation in the LFSP-INSPIRE intervention, particularly the ENIPPA circles. The PI assured confidentiality of all information collected and explained how it would be used, for the sole purpose of the study combined with information from other groups. Participants could ask questions before the discussion started. Group consent was sought before commencing the discussion. Only the group leader signed the informed consent form on behalf of all the other group members and this was explained and agreed upon before commencing each discussion.

The Women's FGD guide (Addendum 11 and 12), guided the discussion, although questions were not necessarily asked in the same order. As much as possible, the PI started with simpler questions in-order to establish rapport. The purpose of the FGDs was to stimulate group discussion and not merely to allow for questions and answers between the moderator and individuals in the group.<sup>158</sup> An attempt was made to allow individuals to agree or disagree with each other to allow for a range of opinions and ideas to be expressed on beliefs, knowledge and practises surrounding household nutrition and healthy eating. The interviewer asked broad, open-ended questions, and then allowed the participants to discuss in depth certain issues that they felt to be more important.

The study was designed to use a recorder to record all the discussions. However, because data was collected a year prior to the 2018 general elections in Zimbabwe and Makoni is a politically sensitive district, the researchers were not allowed to use recorders during the FGDs. To make up for this, a second assistant was engaged to help with recording information from the discussions. The PI led all the discussions, while the two assistants recorded responses. Non-verbal cues were noted and where relevant when the PI requested verbal expressions of the non-verbal cues expressed by some members. Each discussion took between 90 and 105 minutes. The optimum duration for a FGD is between 60 and 90 minutes.<sup>159</sup> The discussions had to be conducted slowly to enable data captures to fully and adequately capture all responses. Only 2 FGDs were conducted per day and a day was allowed between interviews. The time was used to fully compile and write up information imminent from the discussions while it was still fresh to avoid miss-representing the participants' views.

Refreshments were provided to participants during the discussions. Unfortunately, this was not done with the first two groups, as it had not been planned. However, due to the extended length of the discussions beyond the planned 1 hour in-order to allow capturing of responses, refreshments had to be provided to keep participants alive and participating. At the end of each discussion, each participant was presented with a token of appreciation comprising a bar of washing soap, two tablets washing soap and an assortment of vegetable seed packs.

#### **3.4.4.3 Analysis of FGD data**

Data analysis for this study included the following steps:<sup>160</sup>

1. Organising and preparing the data for analysis - organising field notes and typing it out in Microsoft Word,
2. Reading through all the data to gain a general sense of the information and reflect on the overall meaning,
3. Conducting analysis based on phonemic analysis techniques. This involved coding or organising related segments of data into categories,
4. Generating description of the setting or people and identifying themes from the coding and searching for theme connections,
5. Data representation and report generation,
6. Data interpretation and comprehending the results of the data.

NVivo, a computer software intervention for qualitative data analysis, was used to organise, store and make sense of the data. NVivo was particularly used for the following purposes:<sup>161</sup>

- Making notes, writing up, editing, storing data, searching and retrieving data, memorising and data linking,
- Coding, performing content analysis, displaying data, building theory,
- Drawing and verifying conclusions, mapping data graphically and writing reports.

Agro-ecological zone 2b and 3 were analysed separately, and comparisons of findings between the two clusters were made.

Qualitative data analysis refers to the organisation and interrogation of data in ways that allow researchers to see patterns, identify themes, discover relationships, develop explanations, make interpretations, mount critiques, or generate theories. It often involves synthesis, evaluation, interpretation, categorisation,

hypothesising, comparison, and pattern finding; what has been termed “mind work” and researchers always engage their own intellectual capacities to make sense of qualitative data.

The data flow in Figure 3.3 summarises how NVivo was used to manage and interpret the data in the analysis of the findings from the field.

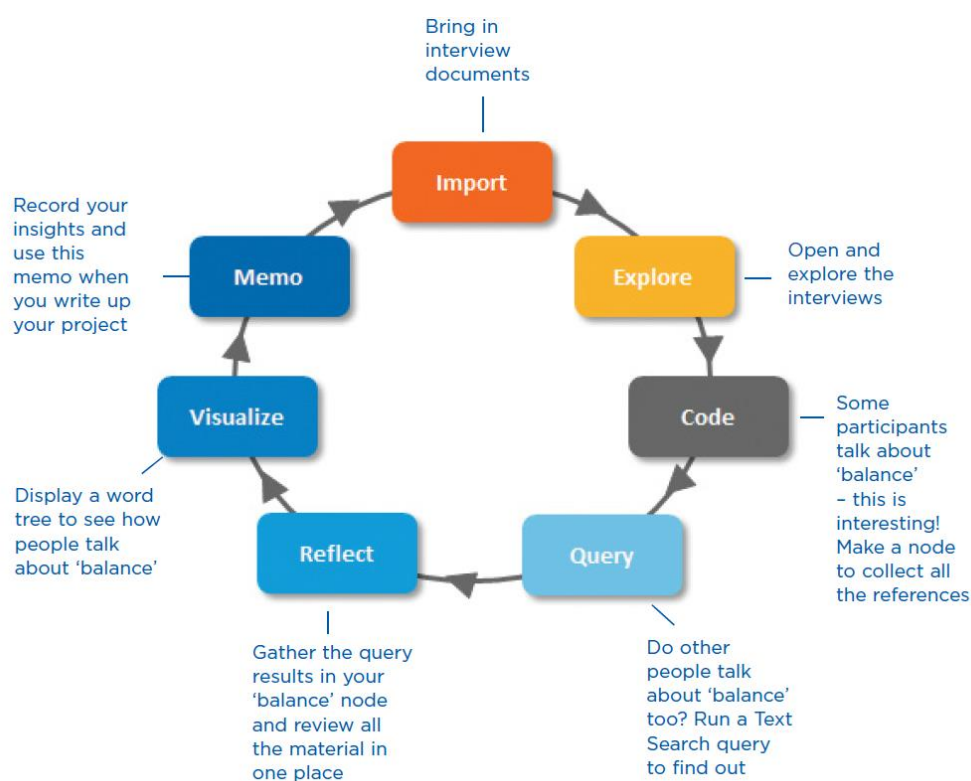


Figure 3.3: Data flow using NVivo software for qualitative data analysis. Adapted from [www.qrsinternational.com](http://www.qrsinternational.com).

#### 3.4.4.4 Validity and reliability

Focus Group Discussions were one of the many methods used to collect data during this study, to triangulate findings and increase validity. FGDs were conducted by the researchers, allowing them to interface with the group members and endeavour to ensure participants fully understood the questions and gave responses useful to the evaluation. It also allowed measuring of attitudes, provided in-depth information, all of which contribute to good interpretive validity.<sup>162</sup> Additional measures were taken into consideration when conducting interviews and FGDs to ensure that:

- Interviewees were provided with space to express their opinions,
- Interviewers were non-judgemental and neutral during the interview,
- Interviewers were respectful, natural and non-threatening, they established rapport and did not interrupt,

- And they took keynotes during the interview process.

All this helped to increase the validity and reliability of this study.<sup>163 164</sup>

In qualitative research, “reality is holistic, multidimensional and ever-changing”.<sup>165</sup> Validity of a research study is concerned with whether a study is believable and true and whether it evaluated what it was supposed to evaluate. The validity also relates to the data collection instruments. The FGD guide was pre-tested before use and questions only provided a guide to endeavour to ensure all needed data was collected. The discussion followed the participants’ cues.

Reliability of data collection instruments is easier with quantitative, rather than qualitative data which is more in narrative and subjective form. It is better to consider the dependability and consistency of the data, referring there to that the purpose must relate to the data collection processes; the findings and results were consistent and dependable.<sup>166</sup> This is the approach adopted for the qualitative data collected through FGDs. The process was evaluated for consistency and considered reliable and dependable.

### **3.4.5 Assessment of factors affecting demand, availability and supply of varied and nutritious foods in local markets**

A rapid market assessment on the availability and type of foods on the local markets in all the areas visited during the data collection period was conducted, using the market assessment guide (Addendum 15). This assessment included the areas that the researcher passed through on the way to conducting interviews with sampled groups or individuals.

#### **3.4.5.1 Rapid market assessment sample selection and size**

Purposive sampling was used to select the areas, markets and people to talk to during the rapid market assessment. All the proximal markets mentioned by participants as possible sources of food were included in the sample. The assessment also included:

- Individuals or groups selling food products in the markets assessed during the study,
- Individuals buying food from the markets assessed.

#### **Inclusion criteria**

- The assessment focused on local markets within the immediate vicinity of participants’ households.
- People buying from and selling in the markets – both formal and informal
- Markets outside the LFSP-INSPIRE intervention wards but possibly serving people in the intervention

#### **Exclusion criteria**

- Non-market participants
- Markets outside the Makoni district

#### **3.4.5.2 Methods and techniques of collection data through the rapid market assessment**

The market assessment was conducted by the PI.

##### **Data collection instruments**

A market observation checklist (Addendum 15) was designed to facilitate data collection and recording of information observed during the assessment. The checklist facilitated collection of information related to:

- Range of foods sold on the local markets and their sources,
- Commonly demanded foods and reasons,
- Demand and supply issues for these foods,
- Reliance of communities on local markets,
- Seasonality in food demands and the factors driving it,
- Any changes in consumer demand for certain food types over the years and possible reasons.

Rapid market assessment was through an observation of all markets – both formal and informal in the areas whereby FGDs and in-depth interviews were conducted. The objective of the assessment was to identify the common foods sold on these markets, understand the selection of these foods and the factors influencing stocking up on these foods. This information would be triangulated with information from FGDs and in-depth interviews during analysis to get a clear picture of how the nutrition BCC activities had influenced demand for a wide variety of nutritious foods.

Markets assessed included fresh fruit and vegetable markets on market stalls and by roadsides, grocery shops in communities and farm-gate markets. The PI used a combination of techniques, including observation of the transactions taking place including types of products sold, as well as informal discussions with the sellers and buyers. The common type and price of foods being traded were noted and so were factors affecting the basic supply and demand of the marketed foods. The information collected was largely qualitative and included quotations from individuals spoken to, observation notes and pictures.

#### **3.4.5.3 Analysis of rapid market assessment data**

The information gathered during the rapid market assessment was synthesised into concise key concepts, quotations and insights about the types of markets, the types of foods sold, the people who bought from these markets and the factors affecting the demand and supply of these foods. This information was analysed and synthesised manually, the findings are outlined in the next chapter.

#### **3.4.5.4 Validity and reliability**

The market assessment was used as one of the many ways to collect data to enable the evaluation of the effectiveness of nutrition BCC by the intervention in increasing demand for diverse and nutritious foods by households, particularly women of childbearing age and children. It provided a way of augmenting information collected by other tools, as highlighted above. This information was also used to triangulate data gathered from households and community members through in-depth interviews and FGDs. A checklist was used to guide the assessments. This checklist was pre-tested before use and was used directly by the principal researcher. The entire process of assessing the markets was outlined to ensure internal validity. Objectivity was maintained in assessing the markets to avoid any bias and ensure results adequately informed future programming.

To ensure reliability, the findings of the assessment were compared to findings of other market assessments, and intervention reports about communities' sources of food from secondary data sources.

### **3.5 Ethical and legal aspects**

#### **3.5.1 Ethical review committee**

A study protocol was developed in 2015/2016 during the research design stage and submitted to the Health Research Committee, Faculty of Medicine and Health Sciences, Stellenbosch University. The protocol was approved on 11 October 2016 (Addendum 16) and assigned the reference number SI/16/04/067.

#### **3.5.2 Authority to conduct the study**

The researcher sought formal authority to conduct the study from the team leader of the Non-governmental organisation (NGO) consortium<sup>7</sup> running the LFSP in the Makoni district. This consortium already has authority from the provincial and district administrative leaders to implement the intervention in the district. The Improved Nutrition for Sustainable Production and Increased Resilience for Economic growth (INSPIRE) intervention manages all activities pertaining to the intervention in the Makoni district. As per plan, the study was conducted under the confines of the LFSP-INSPIRE intervention and the intervention team informed the local authorities of the current study.

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<sup>7</sup> The LFSP is implemented in 8 districts located in 3 provinces of Manicaland, Mashonaland Central and Midlands across Zimbabwe. Each of the three intervention provinces represents a intervention cluster and each cluster has a specific name and is run / implemented by a consortium of several NGOs. The Manicaland cluster comprises three districts of Mutare, Mutasa and Makoni and is implemented by a consortium of 4 NGOs – Goal, Practical Action, Sustainable Agriculture Trust (SAT) and Technoserve. Goal was the consortium leader for this team known on the ground as the Improved Nutrition for Sustainable Production and Increased Resilience for Economic growth (INSPIRE) intervention. All the three clusters and the NGO consortiums are managed by the Food and Agriculture Organization of the United Nations (FAO), who are the fund manager for the DFID funded Agriculture Productivity and Nutrition component of the LFSP.

The same letter to LFSP-INSPIRE also requested intervention documents for review including: the final intervention proposal to FAO, intervention baseline report, district profiles, intervention quarterly and annual reports to FAO, assessment and other study reports. Similarly, the researcher also requested official intervention documents submitted by INSPIRE to FAO and reports of relevant studies, and assessment reports from the LFSP Chief Technical Advisor at FAO. These reports and documents provided background insight into the intervention and the activities done to increase demand for nutritious foods amongst communities in the Makoni rural district.

### **3.5.3 Informed consent**

Participation in the study was voluntary for all participants following an informed consent. All participants were invited to participate at their free will and no incentives were offered. While selection of all the participants was purposive, given the qualitative nature of the study, which required use of knowledgeable people to act as key informants, each participant or group was given an opportunity to either opt in or out of the study. This was done before the participants even met with the researchers, with the help of LFSP-INSPIRE intervention staff after sampling was done. Once individuals or groups had agreed to participate in the study an appointment was set with the PI and assistant.

On the day of the appointment, the study objectives were clearly explained, and confidentiality issues clarified. Participants could ask questions to seek any further clarifications and these were responded to clearly and detailed. The informed consent, which was translated into Shona prior to data collection (Addenda 3 and 4), was clearly read to the participants. Participants were each allowed to decide whether to participate and to sign the consent form before the interviews or discussions began. Even after agreeing to participate in the study and signing the consent forms, participants were still allowed to decide to stop the interview or leave the discussions at any given time. None of the participants; however, aborted the interview or left the discussions before the end.

### **3.5.4 Participant confidentiality**

Participant confidentiality was observed and respected before during and after data collection. None of the participants' names were recorded on the questionnaires and the participants were assured that their names would not be used at all and that the information collected from them would only be used for the purposes of the study together with information from other participants. The following steps were also taken to ensure participants confidentiality:

- All in-depth and key informant interview questionnaires were coded and contained no names of the participants,
- Interviews and FGDs were conducted in secluded places, away from passers-by and other people,



- No external people could walk in and out of the interview or discussion places during interviews or discussions,
- During analysis and report writing, data was presented and discussed in a manner that did not reveal the name(s) of the participants or any information that could link responses to a particular group or person,
- Interview or discussion data was referred to by codes and not names,
- The researcher avoided giving any advice or information during the interviews or discussions, referring any such to LFSP-INSPIRE intervention staff.

### **3.5.5 Perceived risks and benefits**

There were no perceived risks anticipated from participation in this study. The proposed benefits were that the study findings would contribute to the refining of the LFSP-INSPIRE intervention, particularly in the event of an extension of the intervention into a second phase. This anticipated refinement would ensure that interventions would be designed in a way that would result in maximum impacts on the communities' nutritional status. In the absence of a intervention extension, the study findings could still influence the way agriculture interventions, by interventions or by the government are designed to ensure nutrition sensitivity so as to have sustainable outcomes on the beneficiaries. The findings would also assist intervention officers and other interventions to deliver better nutrition interventions to communities in any other similar interventions.

### **3.6 Pilot study**

During the design of the study, a pilot study was not envisaged. Instead, mock interviews, as part of the training of the research assistant were planned. From discussions with the co-study leader, it was agreed that a pilot study was necessary to refine the data collection tools and serve to rehearse the whole process. Thus, a pilot study was conducted over three days – from 28 to 30 December 2016.

The primary objective of the pilot study was to pre-test all data collection tools before they were finalised and printed. The idea was to get the feel of using the data collection tools and give both the researcher and the research assistant an opportunity to administer the tools before they were finalised. It was also done to get the feel of the process, refine guides, rehearse flow of the discussion and take note of salient socio-cultural issues that may hinder participants from openly participating in the study.

As specified in the study protocol to initiate test interviews, the following data collection tools were administered during the pilot study:

- 2 Focus Group Discussions (FGD) with women and men nutrition BCC (BCC) groups – ENIPPA Circles. The researcher led the discussions while the research assistant recorded the participants' responses from the discussion.
- 2 Key Informant Interviews (KII) with intervention officers done by each of the researchers and research assistants.
- 2 In-depth interviews, one with a woman and another with a man.

The participants for the study were purposively selected from areas near Rusape town in the Makoni district where the research team stayed. Two groups were identified with the help of the LFSP-INSPIRE team two weeks prior to the actual pilot study and an appointment was made with the groups. The pilot study was successfully undertaken and completed in three days. The process was challenging, as a result of persistent rains during the period; however, all the selected people could be accessed. All the respondents were responsive and willing to set aside part of their time to participate in the interviews and discussions.

### **3.6.1 Methodological changes made following the pilot study**

One significant methodological change was made following the pilot study. Upon a discussion with the Team Leader of the LFSP-INSPIRE intervention, the researchers were advised against using recorders during interviews. This was mainly because Zimbabwe is going towards the 2018 general elections and many rural areas, particularly the Makoni district are politically sensitive. Recorders have never been used in any of the assessments conducted by the intervention and starting it during the study could have attracted unnecessary attention from government security agents. Following this advice, use of a recorder was abandoned and this was compensated with an increase in the amount of time spent in each FGD, which was the main activity requiring use of recorders. This increase in time allowance was made to ensure adequate capturing of all responses by the respondents during the discussions. To also help with capturing of information coming from the discussions, an additional research assistant, Rodrick Dambanemweya, a national Diploma in Environmental Health student at Mutare Polytechnical College was engaged to help capture data during FGDs.

Another observation made was that there was no male only ENIPPA Circles, despite the intervention reporting their presence. The LFSP-INSPIRE team discovered that there were fewer men to run individual groups; as such these were mixed with females in several groups. The majority of the ENIPPA Circles had women and men in the ratio of about 3:1. The men in these groups were very enthusiastic and participated actively and collaboratively with their female counterparts. In many instances couples were members of a circle. Due to this anomaly, all FGDs were conducted with both male and females together for those selected

mixed groups. Efforts were made to ensure the men's views and insights were sought during discussions. This adjustment was also in affect during the actual data collection process.

A few minor adjustments were also made to the data collection tools following the pilot study. These changes were mostly as a result of minor omissions in the structuring of the questions during the design, which was seen as compromising the quality and usefulness of the collected data. Some related to the recording of unnecessary detail, which could be seen as compromising respondents' confidentiality, such as recording participant's names. The table below summarises the changes made to the data collection tools, including justification of the change.

Table 3.2: Summary of changes made to the data collection tools after the pilot

Change	Justification
Removed respondent name on key informant and in-depth interview questionnaires for both men and women on the questionnaire identification sections and replaced with respondent age.	The name of the participant did not serve any purpose in the study, if anything it violated the participant's confidentiality. This was replaced with the participant's age, which is useful in explaining some of the study findings.
Added ward and village name of the respondent on the KII and in-depth interview questionnaires for both men and women in the questionnaire identification section.	The geographical location of the respondent would help with any call backs or follow up needed to complete data collection, especially in the absence of the respondent's name.
Changed slightly section 2 of the women's and men's in-depth interview questionnaires to capture both garden and field crop production.	The objective is to capture information on household crop production and both field and garden crops are essential.
On the dietary diversity question in the men and women's in-depth interview questionnaires (household, women's and children's), bio-fortified crops were recorded separately to capture information regarding the promotion of these crops,	Bio-fortification is an important agriculture intervention for addressing micronutrient malnutrition which is being promoted by the intervention. Recording specifically the uptake and consumption of these crops is essential for the study findings.

## Chapter 4: Results

### 4.1 Introduction

The study collected both primary and secondary data. The latter was obtained from the LFSP-INSPIRE intervention reports to characterise participants prior to the intervention. A checklist was used to guide data gathering from these reports. The findings were triangulated with data gathered from key informants – intervention officers. Cross sectional quantitative data was collected through an interviewer-administered in-depth interview household questionnaire.

The results of the quantitative data collected through the intervention baseline and the in-depth interviews will be presented in this chapter, whilst qualitative data will be presented in Chapter 5.

### 4.2 Results of the situational analysis using desk review

This section outlines a summary of findings from the review of secondary data from LFSP-INSPIRE intervention documents. The documents reviewed were obtained officially from FAO and the INSPIRE intervention team leader and included:

- The LFSP-INSPIRE intervention baseline report of May 2015,
- LFSP-INSPIRE intervention proposal and nutrition BCC Strategy (the ENIPPA methodology),
- LFSP-INSPIRE annual intervention reports of 2015 and 2016.

The desk review study was guided by the checklist in Addendum 1. Data was reported as it was in the reports and no further analysis was conducted.

The socio-demographic data as well as food security, dietary diversity and nutrition knowledge data was from the LFSP-INSPIRE household survey baseline of May 2015. The survey had a sample size of 704 intervention households which was considered statistically representative of all AERs in the intervention at 95% confidence interval and 0.05 margin of error. The baseline was conducted at the beginning of the intervention and therefore provided an understanding of the status of the target population prior to the intervention. Sampling for the baseline was at AER level. The Makoni district had 43.3% of intervention population in AEZ 2b and 40% in AEZ 3.

#### 4.2.1 The Makoni LFSP-INSPIRE ENIPPA methodology

The LFSP-INSPIRE intervention used a nutrition BCC method termed the Extended Nutrition Impact for Positive Practises Approach (ENIPPA). This low-cost intervention was input free safe for modest provision of

seeds for starting micro-gardens. The model is informed by BCC approaches, including the Positive Deviance Hearth (PDH). The PDH is a successfully proven home and neighbourhood based methodology for managing and preventing malnutrition in impoverished communities. The positive deviance approach is used to find positive uncommon practises among mothers or caregivers of well-nourished children in these communities. These women are then supported to spread these practises amongst other women with malnourished children in the same communities. The “hearth” refers to the approach of gathering women as if around a fireplace in the traditional cooking hut in a rural household where women share practises such as preparation of healthy meals for their children.<sup>167</sup>

A barrier analysis was conducted at the beginning of the intervention to identify obstacles to practising the key selected behaviours. Barrier analysis is a formative research, rapid assessment tool used in behaviour change interventions to identify determinants to behaviour change, so that more effective behaviour change, communication messages, strategies, and supporting activities can be developed. Findings were used to inform the targeted Design for Behaviour Change (DBC) framework. This framework identified key bridges to unblocking barriers to practising positive behaviours.<sup>168</sup>

Positive deviants already practising the promoted behaviours were identified and trained intensively as volunteer facilitators. The training capacitated the volunteers to use interactive communication methods such as dramas, slogans, poems songs, peer-to-peer learning, practical demonstrations, and testimonies related to the promoted behaviours. Each volunteer facilitated activities for a group of women and men – with a maximum 15 members, called ENIPPA Circles.

The model focused on pregnant and lactating women, mothers of children under the age of five years and other interested individuals. The ENIPPA method asserts that a critical number of contact sessions are essential for the adoption of promoted behaviours. In ENIPPA, circle members met at least once a week over a period of six months to allow circle members time to also participate in agriculture production activities. Group learning was sensitive to the annual agriculture calendar allowing session topics to be in sync with seasons, e.g. cooking demonstrations were conducted during the time when food was being harvested and those foods were used in the demonstrations.

ENIPPA circle volunteers were assisted by Village Health Workers (VHWs) and Environmental Health Technicians (EHTs) to facilitate circle sessions.<sup>8</sup> Circle sessions focused on BCC counselling, increased access to diversified diets, promoted micro-gardening (low input backyard gardens), and cooking demonstrations. The following key behaviours were promoted during the intervention:

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<sup>8</sup> VHWs and EHTs are Ministry of Health and Child Care community workers based at village and ward levels respectively. VHWs are paid a basic monthly allowance while EHTs receive a monthly salary from the government.

- Exclusive breastfeeding of children under 6 months,
- Consumption of iron rich foods (CIRF),
- Timely introduction of complementary feeding (TIC),
- Four star diet for children aged 6 – 23 months<sup>9</sup>,
- Hand washing at the five critical times<sup>10</sup>,
- Use of improved sanitation facilities,
- Appropriate disposal of waste – using rubbish pits and recycling,
- Establishment of household micro-gardens,
- Preservation of vegetables by solar drying,
- Conservation agriculture.

During the course of the LFSP-INSPIRE intervention, 2 full cycles were completed reaching many men and women.

Complementary to the nutrition BCC intervention, the LFSP-INSPIRE intervention also supported production of a wide variety of crops through the agriculture production component of the intervention. Agriculture extension officers from the ministry of agriculture received nutrition training and helped farmers to incorporate nutrition objectives in their crop and livestock production. Small livestock such as chickens, goats and rabbits were produced. Aquaculture was piloted in the province through the establishment of fish ponds. The intervention also trained local artisans to make solar driers that were then made available for communities to use to dry their vegetables. The intervention also introduced two bio-fortified crop varieties – high iron and zinc beans and vitamin A orange maize.

#### **4.2.2 Socio-demographic status of the Makoni district intervention population**

The total sample at baseline was 704 households. Most of these households, 71.6% were male headed and only 28.4% were female headed. The average age of a household head was 52.4 years. 4.1% of the target households had a chronically ill member unable to provide agricultural labour, while 4.15% of households had a mentally ill member in the age group 18 to 60 years. About 52% of the households had children under the age of five years and had an average of 2.14 people aged 18 to 60 years who could provide household labour towards agriculture production. Households had on average less than 1 person (0.09) aged 18 to 60 years who could not provide agriculture labour.

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<sup>9</sup> Based on the WHO guide for optimum complementary feeding where children aged 6 to 23 months should eat a minimum of four food groups form a group of seven in order to achieve a minimum acceptable diet

<sup>10</sup> The five critical times are after visiting the toilet, after changing a child's diapers, before eating, before preparing or handling food and before feeding a child.

#### 4.2.2.1 Livelihood status/situation

Crop production was the main livelihood source for most households, at 78.8%, followed by casual labour at 6.8%. More female-headed households, 9% reported petty trading as the most important livelihood source compared to only 2.45% of male-headed households. Similarly, more female-headed households; 7.5% reported remittances as their most important source of livelihood compared to 4.1% of male-headed households as depicted in Figure 4.1.

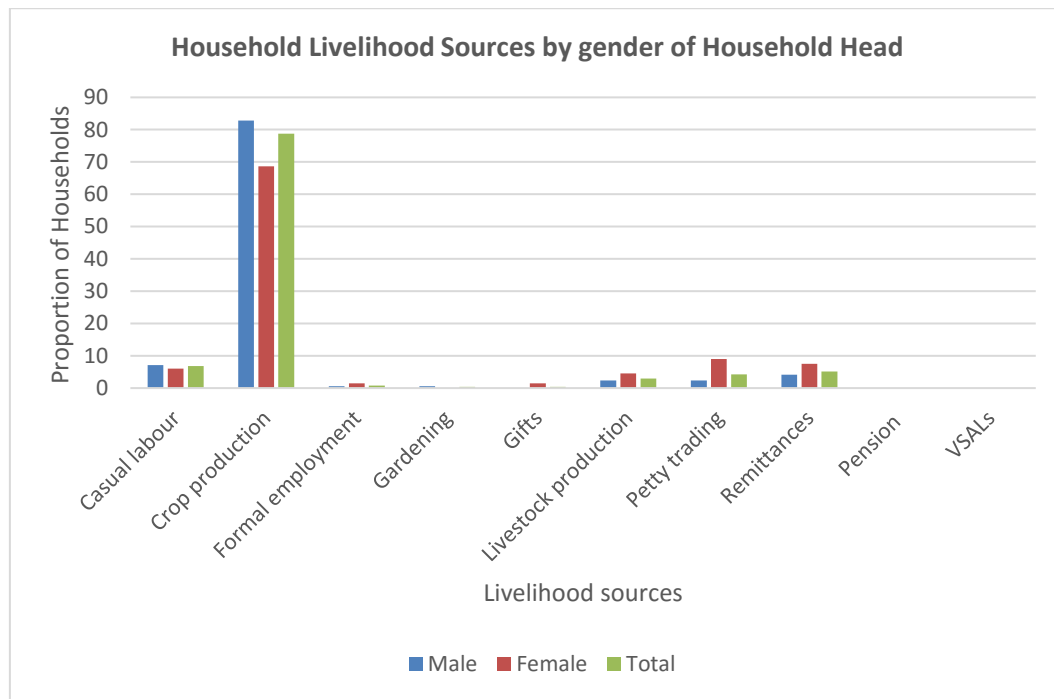


Figure 4.1: Household livelihood sources disaggregated by the gender of the household head. Adapted from the LFSP-INSPIRE Intervention baseline survey report 2015.

#### 4.2.3 Household food security, dietary diversity and food consumption patterns

Household food security status was assessed using the Household Hunger Scale. On average more female headed households were less likely to be hungry, compared to male headed households. As shown in Figure 4.2, 92.5% of female headed households had little or no hunger compared to only 86.4% of male headed households. Similarly, more male-headed households, 13.02% had moderate hunger compared to just 7.4% of female-headed households.

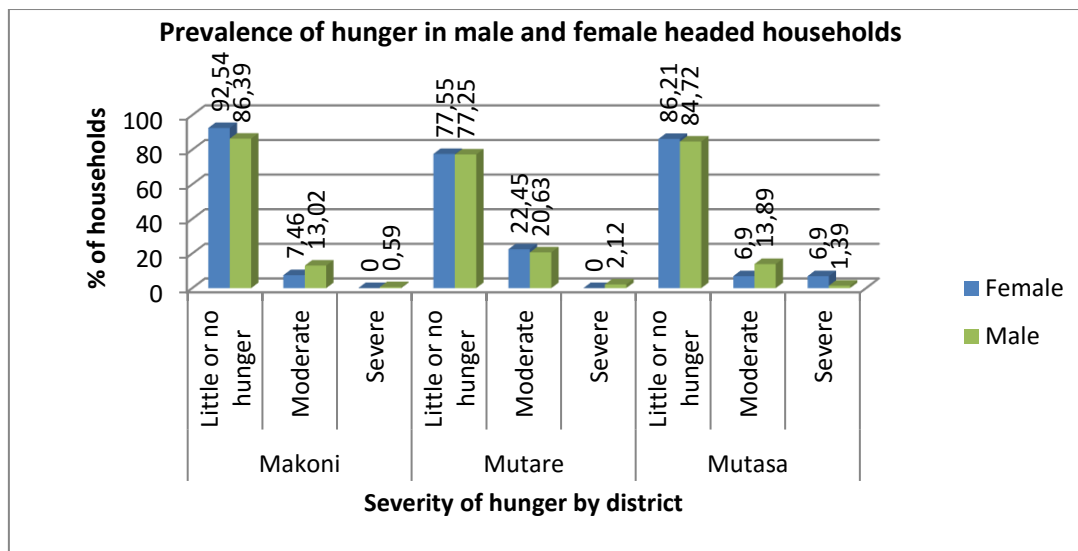


Figure 4.2: Prevalence of hunger in male and female households. Adpated from: INSPIRE Intervention baseline survey report 2015.

Household dietary diversity was assessed using the Household Dietary Diversity score. Most households consumed foods from between four and seven food groups, as shown in Figure 4.3. About 26.7% of households consumed foods from five food groups the day before the survey, indicating that the target households' diets were diversified.

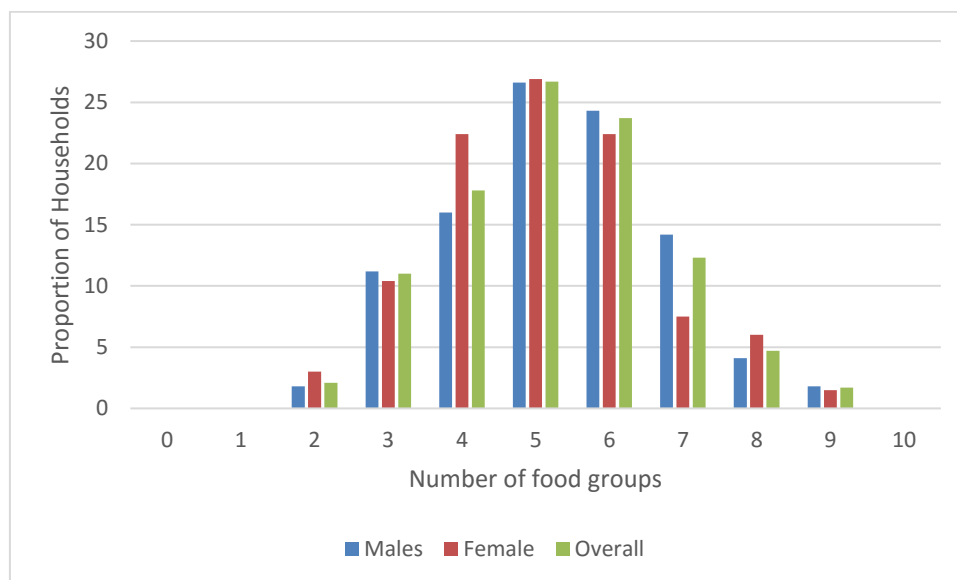


Figure 4.3: Food groups consumed by target households a day before the survey. Adapted from: data from the INSPIRE Intervention baseline survey report 2015

As shown in Figure 4.4, the most commonly consumed food groups were cereals, vegetables, sugars and fats/oils, consumed by more than 80% of the target population. The least consumed food groups were eggs; consumed by 6% of the households, meat and fish at 26.27% and legumes at 27.12%. It is worth noting that



the most nutritious food groups, in terms of providing more essential nutrients other than just energy, were the least commonly consumed foods. A significant proportion of the households were; however, consuming fruits, milk and milk products at 38.14% and 32.2% respectively.

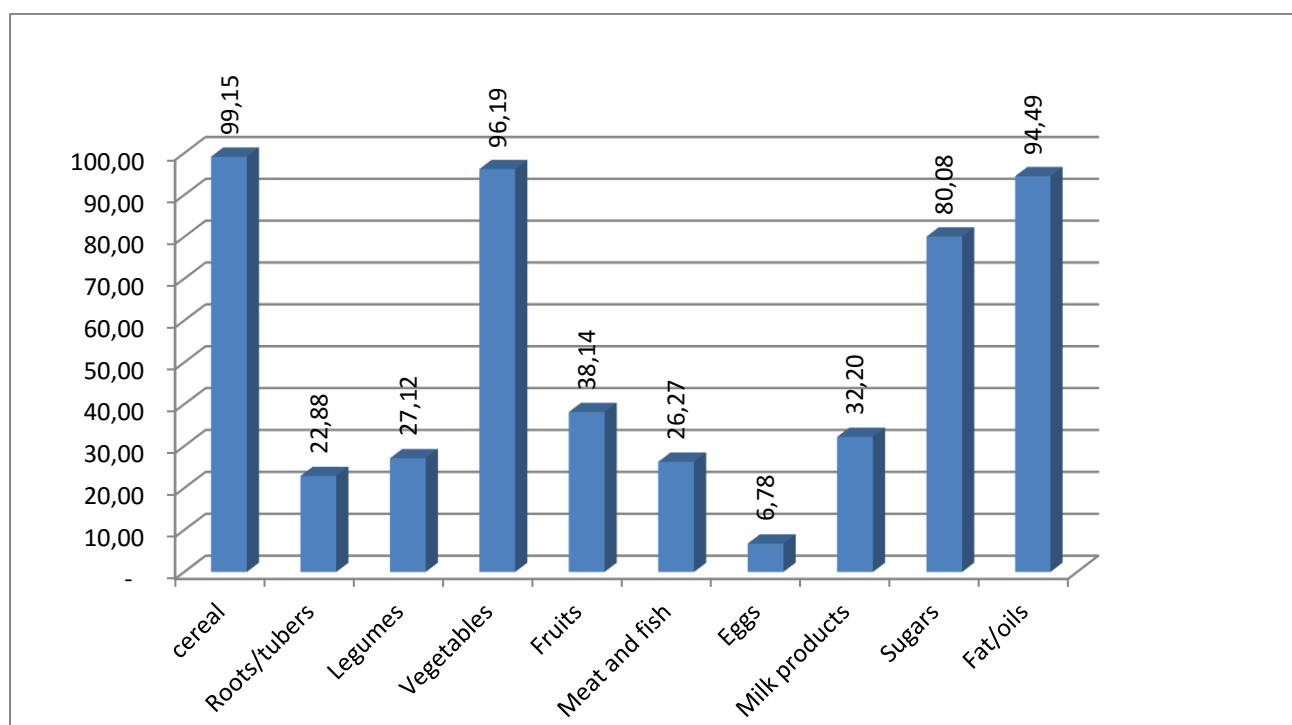


Figure 4.4: Consumption of various food groups by households. Adapted from: INSPIRE Intervention baseline survey report 2015

#### 4.2.4 Infant and Young Child Feeding (IYCF) status

Infant and young child feeding practises amongst children aged 0 to 23 months were assessed using the WHO IYCF indicators for minimum dietary diversity, minimum meal frequency and minimum acceptable diet. Minimum dietary diversity is defined as the proportion of children aged 6 to 23 months receiving food from four or more food groups.<sup>169</sup> The four food groups are part of a selection of seven food groups, including grains roots and tubers, legumes and nuts, dairy products (milk, yoghurt and cheese), flesh foods (meat, poultry, fish, liver/organ meats), eggs, vitamin A rich fruits and vegetables and other fruits and vegetables. Consumption of any amount of food from each food groups the previous day is enough to count; there is no minimum quantity, except when the food is used as a condiment. The cut-off of at least 4 of the 7 food groups was selected because it is associated with better quality diets for both breastfed and non-breastfed children.<sup>170</sup> This indicator assesses the quality of complementary foods/feeding, as such, breast milk is not included in the calculation of the indicator. In the Makoni district, only 12% of children aged 6 to 23 months in the sampled households were consuming a minimum dietary diversity of at least four food groups per day. Of these, 17% were from women headed households while 10% were from male-headed households.

Minimum meal frequency is defined by the WHO as the proportion of breastfed and non-breastfed children 6 to 23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more. The WHO definition further indicates that minimum is defined as twice for breastfed infants aged 6 to 8 months, three times for breastfed children aged 9 to 23 months, four times for non-breastfed children aged 6 to 23 months and meals include both meals and snacks, and frequency is based on caregiver report. This indicator is used as a proxy for energy intake from foods other than breast milk.<sup>170</sup> In the Makoni LFSP-INSPIRE baseline of 2015, 54% of children aged 6 to 23 months received a minimum meal frequency the day before the survey.

The WHO also defines the minimum acceptable diet indicator as the proportion of children 6 to 23 months of age who receive a minimum acceptable diet (apart from breast milk).<sup>170</sup> This is a composite indicator for both minimum dietary diversity and minimum meal frequency. In the Makoni baseline assessment of 2015, 20% of children aged 6 to 23 months in the sampled households had received a minimum acceptable diet the day before the assessment.

Furthermore, 55.6% of the sampled children under the age of six months were exclusively breastfed. The WHO defines exclusive breastfeeding as the proportion of children aged 0 to 5 months fed exclusively on breast milk.

#### **4.2.5 Positive nutrition and health behaviours (improved WASH)**

This data was reported for the whole LFSP-INSPIRE intervention population in the three intervention districts of Makoni, Mutasa and Mutare. Hand washing with soap particularly after contact with faeces can reduce diarrheal incidence by 42 to 47%.<sup>170</sup> In the baseline survey individuals were asked at which points they wash hands and 97% reported that they wash hands before eating and 80% after defecation. Of these households, 4% used ash, 51% just water, 45% used soap and 0.17% used wild plants as soap substitutes.

It was found that 76.3% of the surveyed households had a toilet on their homestead and of these 58% had improved ventilated toilets, 29% had just pit latrines and 12% had open pits. Of the households with toilet facilities, 15.7% had hand-washing facilities installed on or in the immediate vicinity of the toilet facility.

#### **4.2.6 Garden and field crop production**

Diversified garden production can have a positive influence on household dietary diversity. In the Makoni district, most households; 56% were growing only one type of crop in their gardens while 20% and 16% were growing two and three different crops, respectively. The most commonly grown vegetables were green leafy vegetables – covo (*Brassica oleraceae* var. *acephala*) at 50% and tsunga/indian kale (*Brassica juncea*) at 19.4%

Of the whole LFSP-INSPIRE intervention population surveyed at baseline, 91% of households were growing maize, 37.9% groundnuts, 20.7% Bambara groundnut (*Vigna subterranea* (L.) Verdc.), 10.4% cowpeas and 8.9% sugar beans.

#### 4.2.7 Progress achieved with nutrition BCC from secondary review of intervention reports

The 2015 and 2016 annual intervention reports for the Makoni district reported that households were adopting the promoted behaviours. This was evidenced by:

- Establishment of hand-washing facilities “tippy-taps” at strategic points around the home in more than 80% of the circle members’ households and at least 50% of other intervention beneficiaries not participating in ENIPPA Circles.
- Establishment of micro-gardens in more than 60% of circle member households growing a wide variety of vegetables being consumed in the home. Some households reported selling excess produce.
- Construction of improved sanitation facilities in at least 20% of households that had no improved sanitation facilities.
- Establishment and use of rubbish pits in more than 90% of circle member households.
- Establishment of improved dishwashing racks<sup>11</sup> in more than 90% of the households.
- Establishment of fuel efficient stoves in more than 50% of the households of circle members and other non-circle members.
- Improved (not quantified) knowledge and understanding of malnutrition and its causes amongst circle members and all intervention beneficiaries and surrounding communities.
- Improved knowledge (not quantified) of dietary diversity (the four star diet) amongst more than 90% of the circle members.
- Improved household dietary diversity – 64% of the beneficiary households as reported in the intervention’s crop and livestock assessment report of 2016.
- Testimonies and success stories of exclusively breastfed children including from religious objectors converted by the intervention (not quantified).
- Production and consumption of bio-fortified crop varieties – vitamin A orange maize and iron and zinc beans by more than 20% of intervention beneficiary households.

Following the secondary review of the intervention reports and key information pertaining to the LFSP-INSPIRE intervention, the study collected data from the intervention areas and beneficiaries and the results of these are outlined in section 4.3.

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<sup>11</sup> Structures made of wooded rods cut from small thin trees tied together with rope or tree bucks used to wash and dry plates in rural areas

### 4.3 Results of primary data collection

Primary, quantitative data was collected using various data collection tools as outlined in Chapter 3, section 3.1. The results of the analysis of this data are outlined in this section.

#### 4.3.1 Results of Socio-demographic and Household parameters of participants'

This section outlines the results from the analysis of household data collected through quantitative methods (close ended in-depth interview questionnaires). The data reported here was collected two years after the start of the LFSP-INSPIRE intervention.

Forty households (n=40) purposively selected from the intervention population (N=704) were assessed for: socio-demographic parameters, household food security status, household dietary diversity, and dietary diversity of women of childbearing age, and children aged 6 – 23 months. Five men and 15 women were interviewed per cluster – AER (n=20) to give a total of 40 households assessed in the study (n=40). All the assessed variables of the two AERs were compared using Pearson's Chi Square test. The results showed no differences between the two regions, p-value < 0.05.

##### 4.3.1.1 Demographic data of participants

The majority (85%) reported having a male household head and only 15% of households reported having a female head as shown in Figure 4.5. This is compared to 71.6% and 28.4% male and female headed households respectively at baseline.

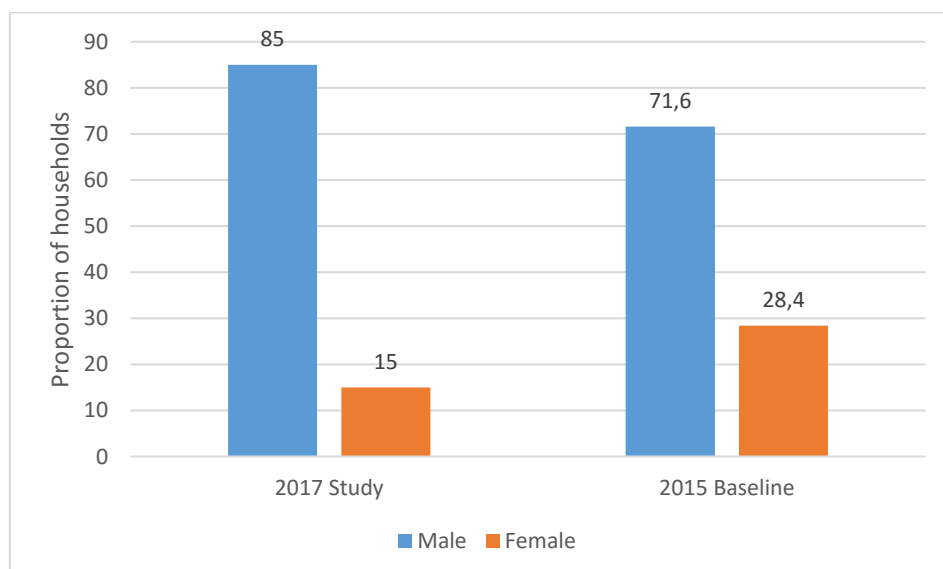


Figure 4.5: Gender of household head

The majority (80%) of household heads were aged between 31 and 60 years in line with the 52.4 years average age of household head at baseline.

The majority had the household head married and living together with their spouse, as depicted in Figure 4.6.

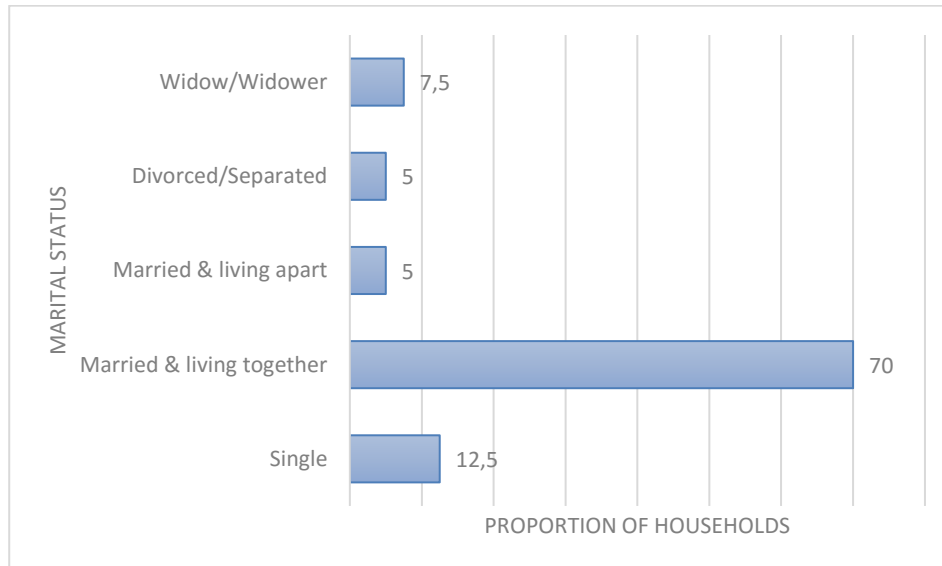


Figure 4.6: Marital status of household head

Most assessed households had between 4 and 6 members, as depicted in Figure 4.7.

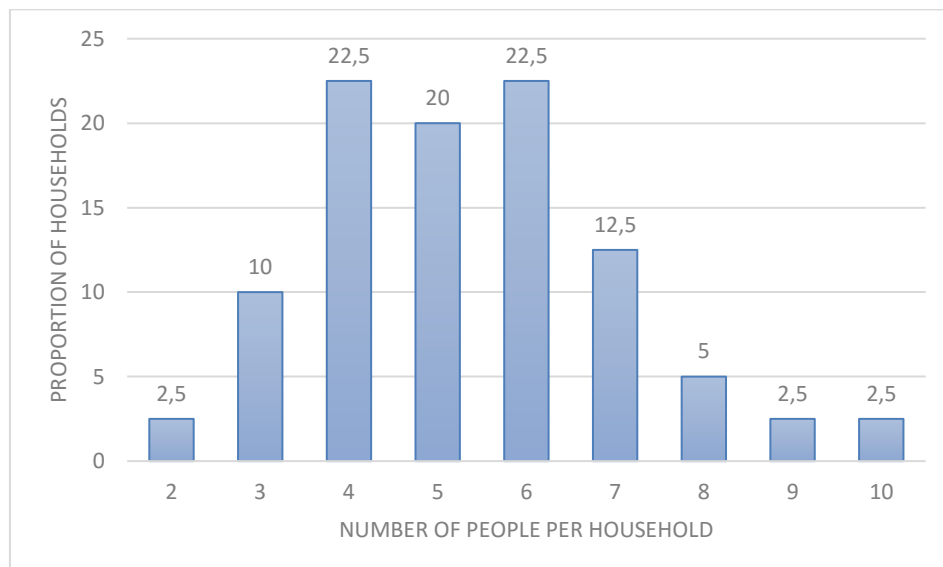


Figure 4.7: Number of people living in the assessed households

Households were asked if they were receiving any outside support and its source. Almost 99.9% reported to receiving support from NGO (46.3% through the LFSP-INSPIRE intervention), within Zimbabwe urban support

(31.7% urban to rural support) and government support (19.5%, from the Command Agriculture input intervention). See Figure 4.8.

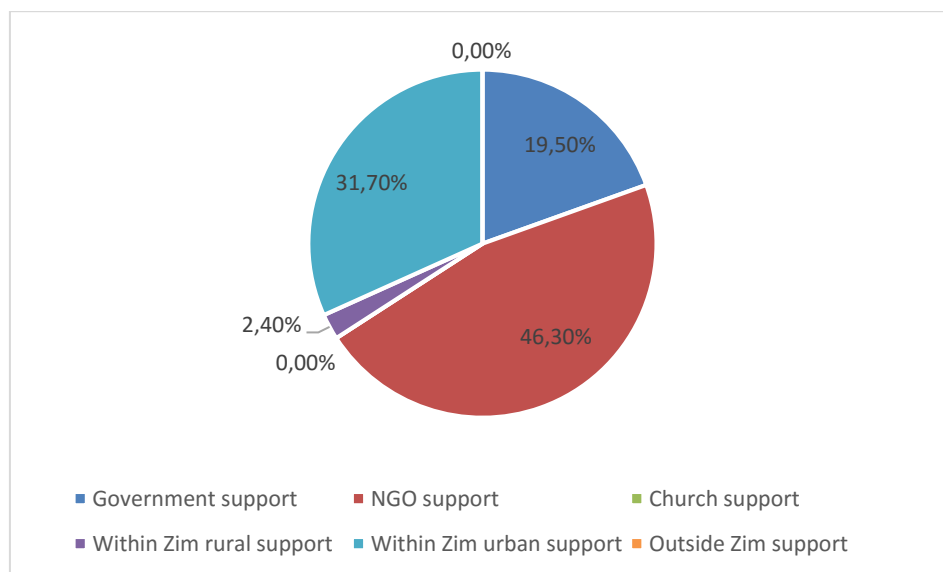


Figure 4.8: Households receiving aid

#### 4.3.1.2 Household food and nutrition security data

The most commonly consumed cereal in the households was reported to be maize. Most households (97.5%) had maize stocks for consumption lasting 2 weeks or less (45%). Only 25% of households had stocks that could last up to 3 months. This question was asked as a proxy for household food security status. See Figure 4.9. The baseline survey reported that approximately 90% of households (92.5% male headed and 86.4% female headed) had little or no hunger.

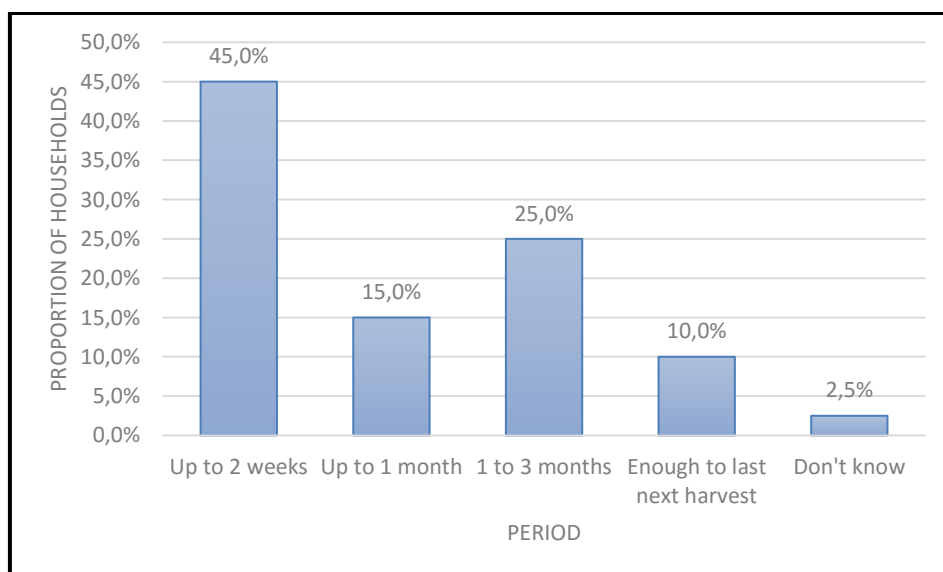


Figure 4.9: Household with cereal lasting for the various time periods

Household vegetable production and consumption was reported by 97.5% of all 40 households. The households reported that they had a household garden where a variety of crops were being grown. The majority were consuming some of the produced vegetables, see Figure 4.10. The baseline reported that 56% of households were growing only one type of crop in their garden, and 20% and 16% were growing two and three crops respectively as reported under section 4.1.6 above. In section 4.1.3, the baseline findings reported that cereals, vegetables, sugars and fats/oils were consumed by 80% of the population.

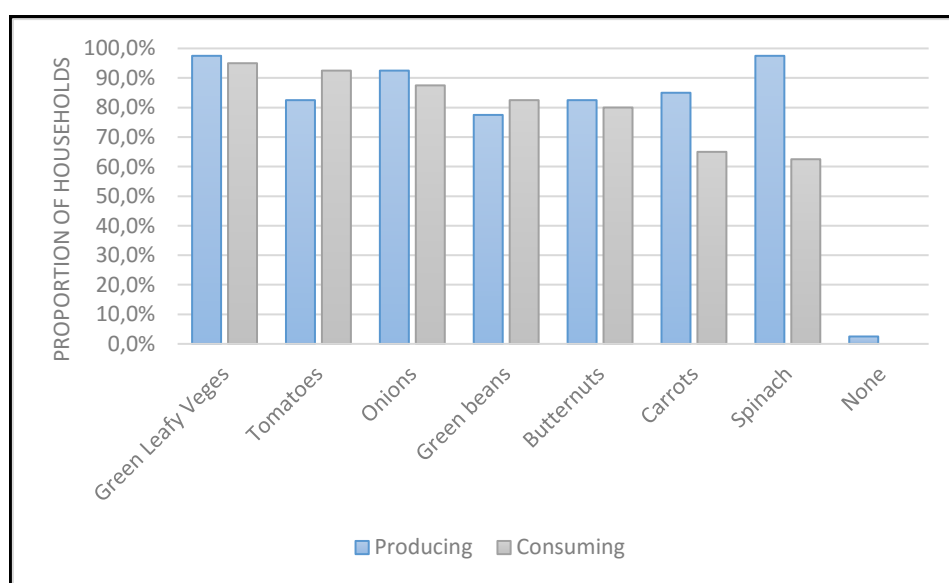


Figure 4.10: Household vegetable production and consumption

Household fruit production was reported by 95% of assessed households who had fruit trees from which they consume fruits regularly. The baseline survey did not assess fruit production separately. Fruit production was not mentioned under garden and field crop production in section 4.1.6, Figure 4.4. In section 4.1.3 above it was reported that 38.14% of households were consuming fruits.

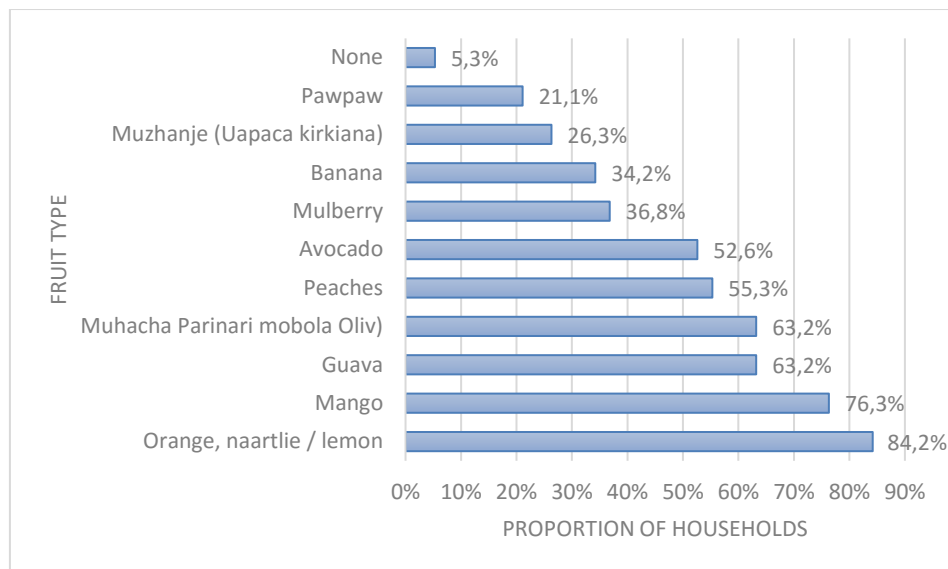


Figure 4.11: Household fruit production

Households reported that they had a field where they were growing a variety of crops and most of the crops were mature and ready for consumption. Households were consuming the ripe crops, except for bio-fortified maize (12.8% of 40%), sugar beans (15.4% of 90%) and green leafy vegetables (25.6% of 95%), see Figure 4.12. The baseline reported that maize, groundnuts, Bambara nuts (*Brassica oleraceae* var. *aceplala*), cowpeas and sugar were the commonly grown field crops. The most commonly grown vegetables were green leafy vegetables – covo (*Brassica oleraceae* var. *acephala*) at 50% and tsunga/indian kale (*Brassica juncea*) at 19.4%.

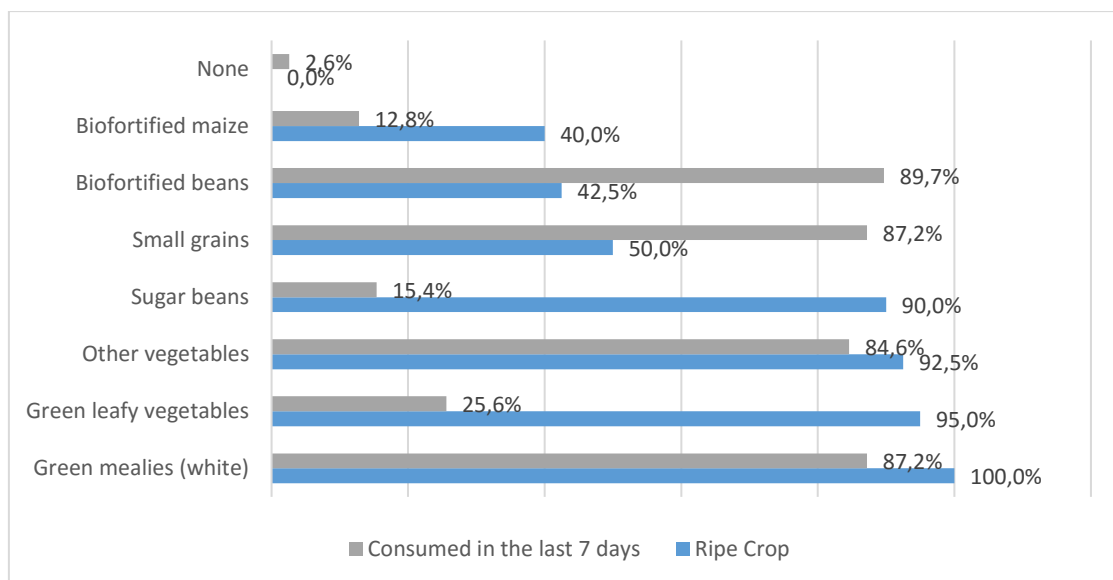


Figure 4.12: Household crop production and consumption



Casual labour and food crop production were ranked the first most important income sources by most households, 55% and 20% respectively, see Figure 4.13. This is in comparison to crop production reported as the main livelihood source for 78.8% of households at baseline followed by casual labour at 6.8% as reported in Figure 4.1.

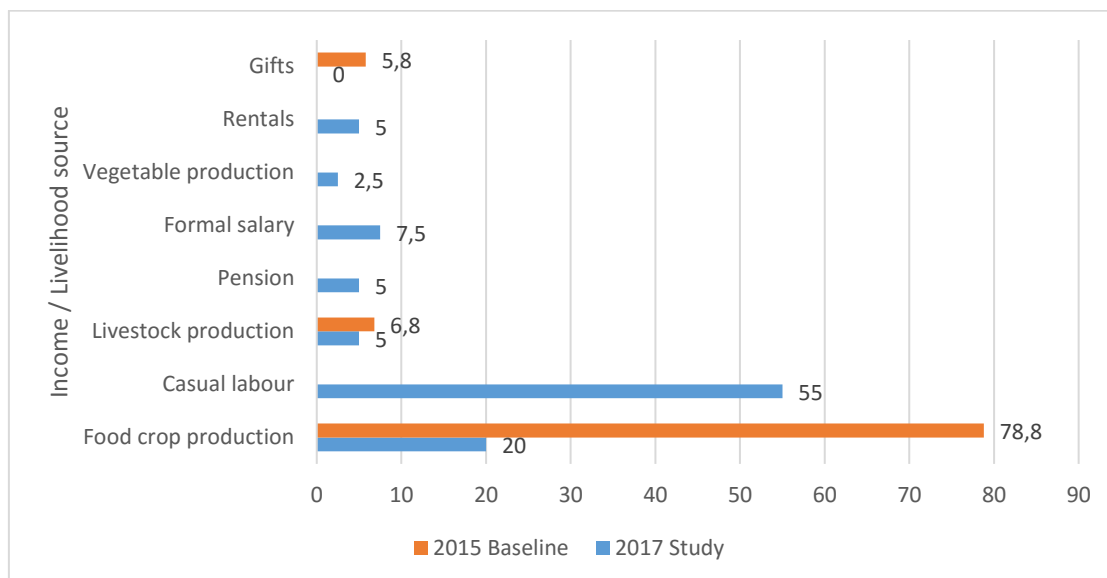


Figure 4.13: Households' income/livelihood sources

Household food consumption and dietary diversity patterns were established. Almost 57% of households consumed four meals a day prior to the assessment, compared to 18% at baseline. Nearly 23% of households consumed less than four meals, compared to approximately 13% at baseline. Similarly, 20% of both children and households consumed more than four meals, compared to nearly 46% at baseline, see Figure 4.14.

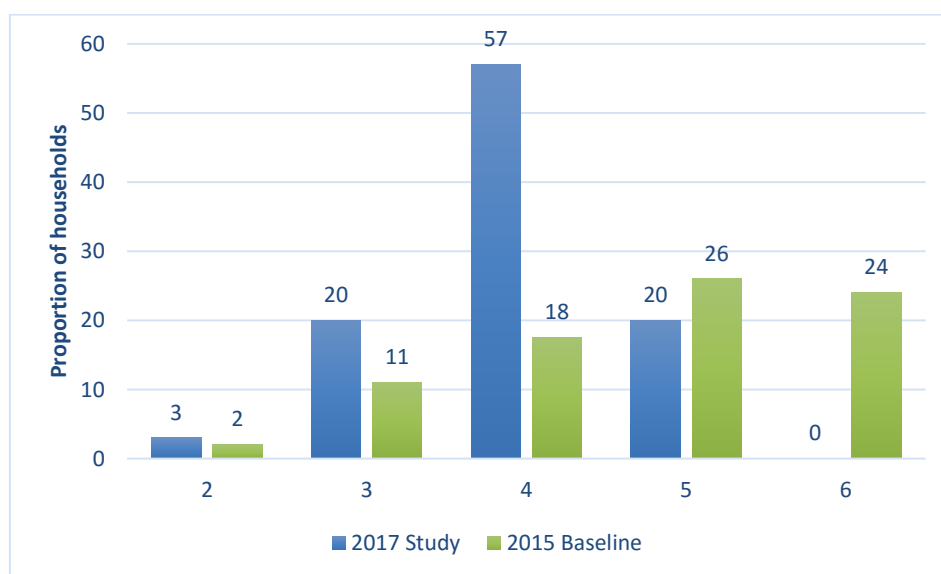


Figure 4.14: Number of meals consumed by households

Of the 30 households, it is worth noting that only 73% and 63% of households and children aged 6 – 59 months respectively in these households reported that this was their normal way of eating. A small proportion of 27% and 37% of households and children respectively, reported that this number of meals was not their normal way of eating.

Crop bio-fortification is a new agriculture technology with proven benefits on nutrition. This intervention was introduced to the Makoni households for the first time through the LFSP-inspire intervention. The study revealed that 46.7% and 30% of households consumed vitamin A orange maize and high iron and zinc beans, respectively a day before the study. The most common sources were own production and purchases, as shown in Figure 4.15. No households were producing and consuming biofortified crops at baseline.

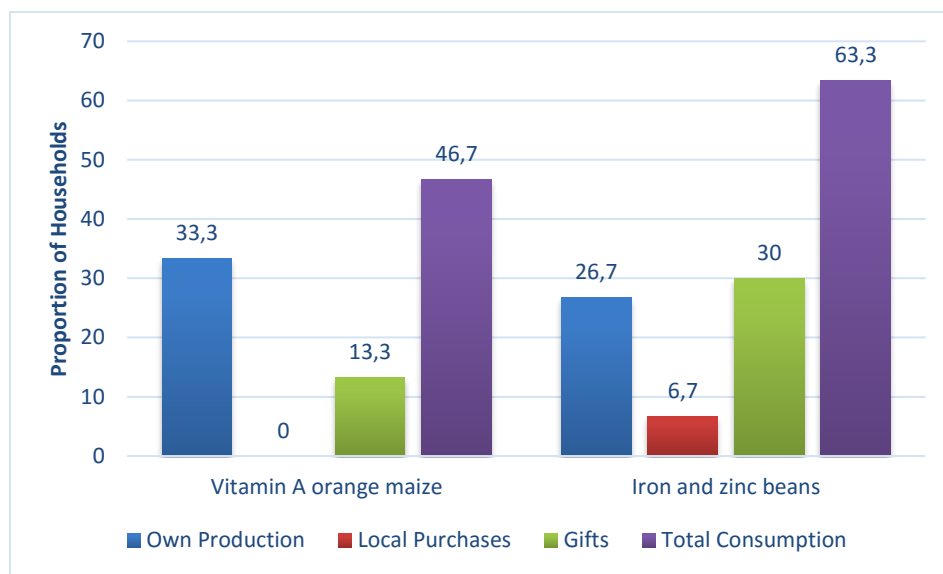


Figure 4.15: Household consumption of bio-fortified crops and sources of the crops

About 65% and 96.7% of households consumed animal protein (beef, poultry and fish) and fruits, respectively, compared to 26.3% and 38.1% for meat, fish and fruits respectively at baseline. Approximately 54.8% of the meat and fish consumed by households was from local purchases, while 10.2% was from own production. Consumption of indigenous fruits gathered from the wild was also common, constituting to 46.7% of the total fruit consumption by households. None of the fruits consumed in households came from purchases on the local markets. Sources of meat and fish and fruits were not assessed at baseline, see Figure 4.15.

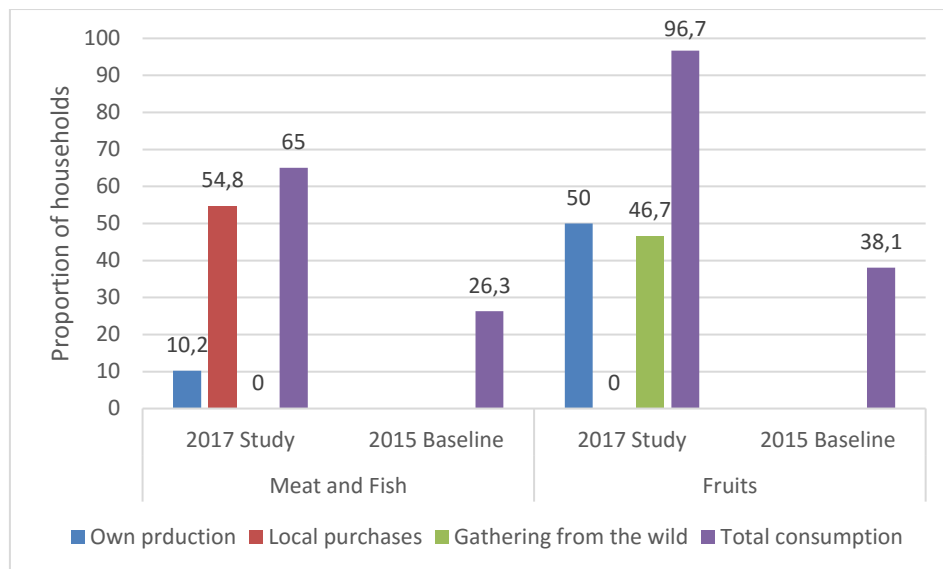


Figure 4.16: Household consumption of meat and fruit and their sources

Household Dietary Diversity Score (HDDS) is a snapshot measure of household economic access to food developed by FAO in 2011. Changes in HDDS are associated with household changes in socio-economic status and food security. The higher the diversity, the greater the chances of a household meeting its energy and nutrient needs from the food they consume. In this study, 86.7% of households consumed more than 6 food groups compared to 17% at baseline, see Figure 4.17.

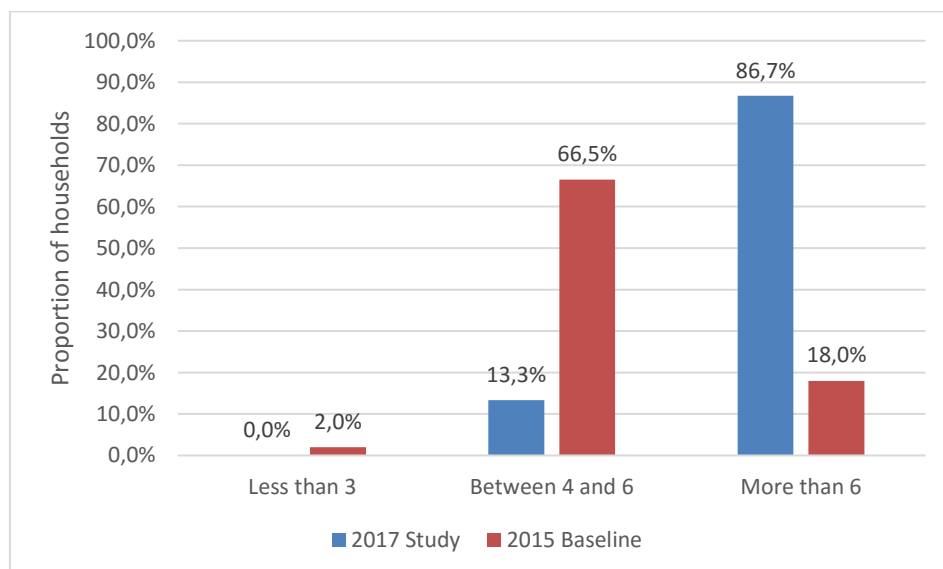


Figure 4.17: HDDS by number of households falling in different categories.

Household Food Consumption Score (HFCS) is an indicator developed by the World Food Intervention (WFP) which is a composite of household dietary diversity, food frequency and relative nutritional value of various food groups. It is intended as a proxy for household food access, intake for energy and macronutrients and

intake of micronutrients. In this study 96.7% of assessed households were consuming acceptable diets, see Figure 4.18. Household food consumption was not assessed at baseline.

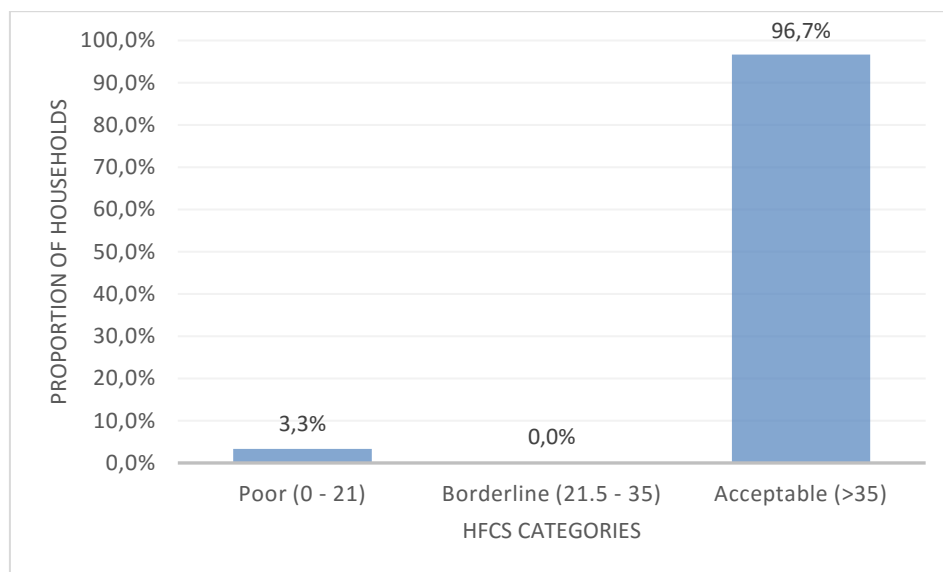


Figure 4.18: HFCS by number of households falling in each category

Household food security status was assessed using the Household Food Insecurity Access Scale (HFIAS) and this questionnaire was only administered to female respondents. The average HFIAS for all 30 households assessed during the study was 8.03

#### 4.3.1.3 Women's dietary practises

The Minimum Dietary Diversity for women (MDD-W) is designed to estimate at the population level diet quality as far as meeting micronutrient adequacy for selected micronutrients is concerned. In this study, 30 women in the age groups 15 – 49 were assessed. Approximately 60% of these women had consumed vitamin A orange maize, 46.7% consumed high iron and zinc beans, 86.7% consumed vitamin A rich vegetables and green leafy vegetables, while 63.3% consumed mangoes and pawpaw. A further 66.7% consumed some form of meat, while only 33.3% consumed milk and milk products. Figure 4.19 summaries these findings. Women's dietary diversity was not assessed at baseline.

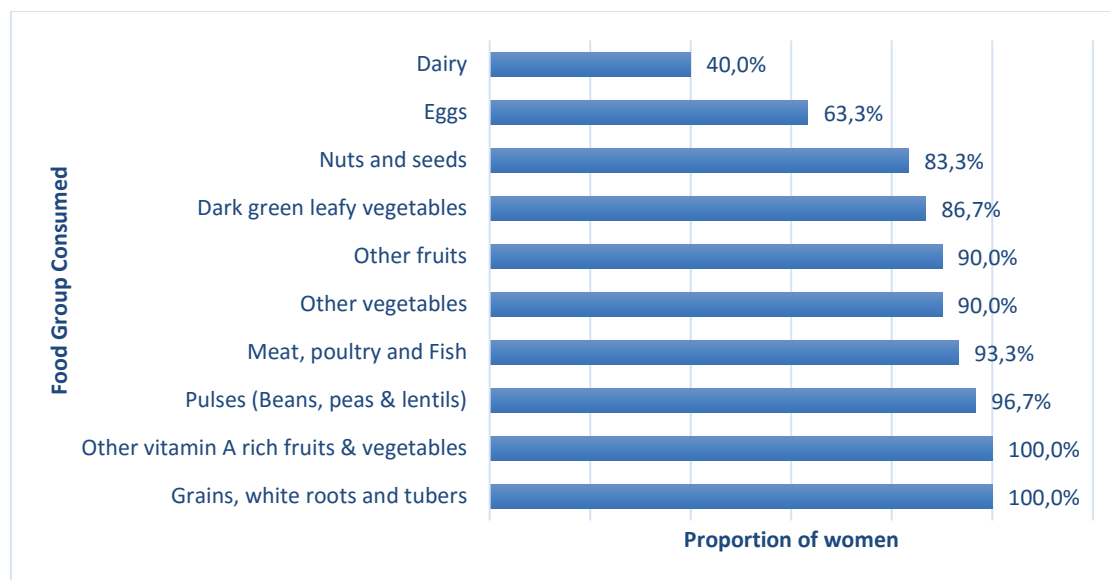


Figure 4.19: Consumption of various food groups by women aged 15 – 49 years old

Furthermore, 93.3% of the 30 women assessed were consuming a minimum diversified diet of at least 5 out of 10 foods from the designated food groups. It can be estimated that these women were consuming a diet likely to meet their minimum requirements for essential micronutrients.

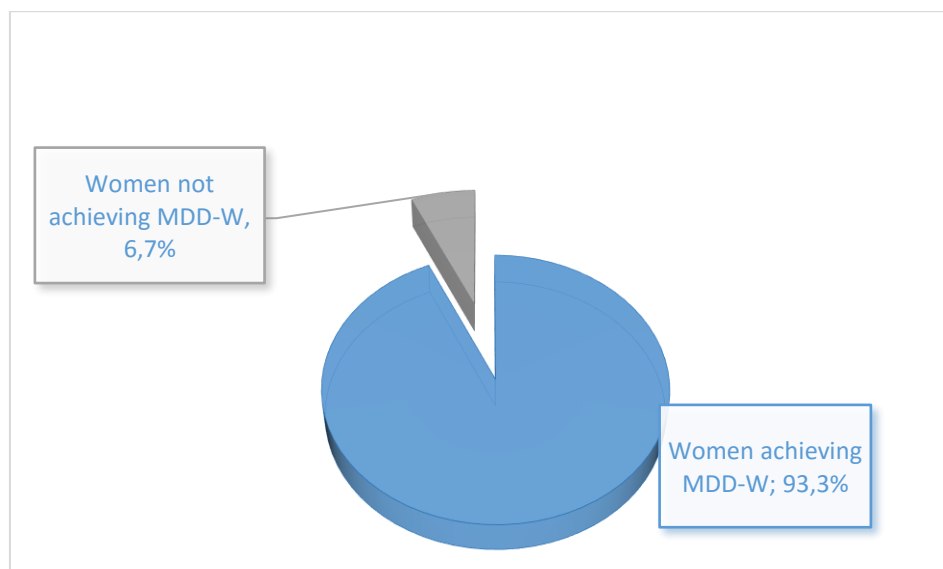


Figure 4.20: Minimum dietary diversity for women

#### 4.3.1.4 Child feeding practises

Dietary diversity was assessed amongst all children aged 6 – 23 months in the studied households. A total of 37 children (n=37) were included in the study. Approximately 81.1% of these children consumed 4 or more meals the day before the assessment as depicted in Figure 4.21. This is compared to 54% of children at baseline reported to achieving a minimum meal frequency.

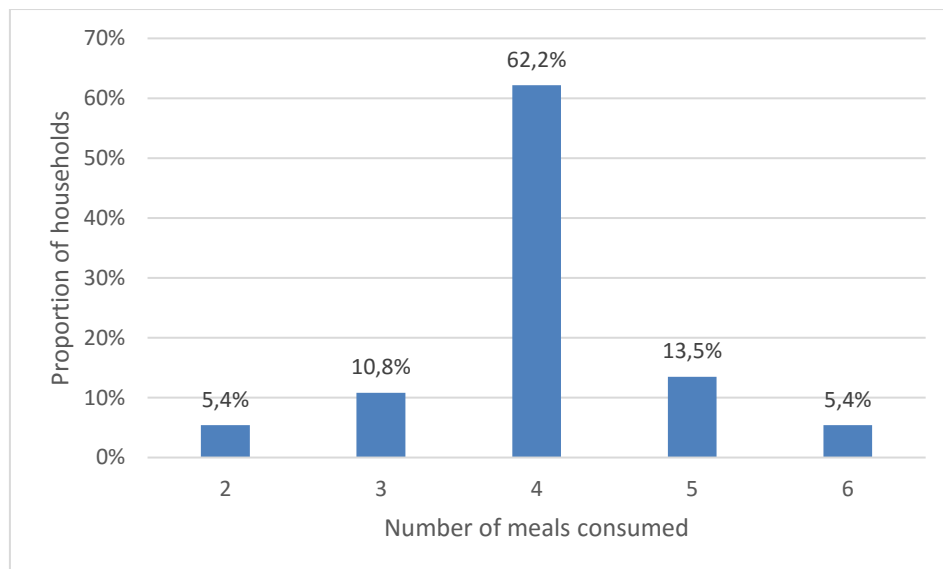


Figure 4.21: Number of times children aged 6 to 23 months were fed in a day

The minimum dietary diversity (MDD) indicator was calculated by assessing the proportion of children consuming at least four out of the seven assessed food groups, according to the WHO methodology for assessing children's MDD. All (100%) of the children were consuming a minimum diversified diet for their age. Figure 4.22 shows the children's consumption of various food groups. The baseline study indicated that 12% of children were achieving MDD. Data for consumption of the different food groups was not available.

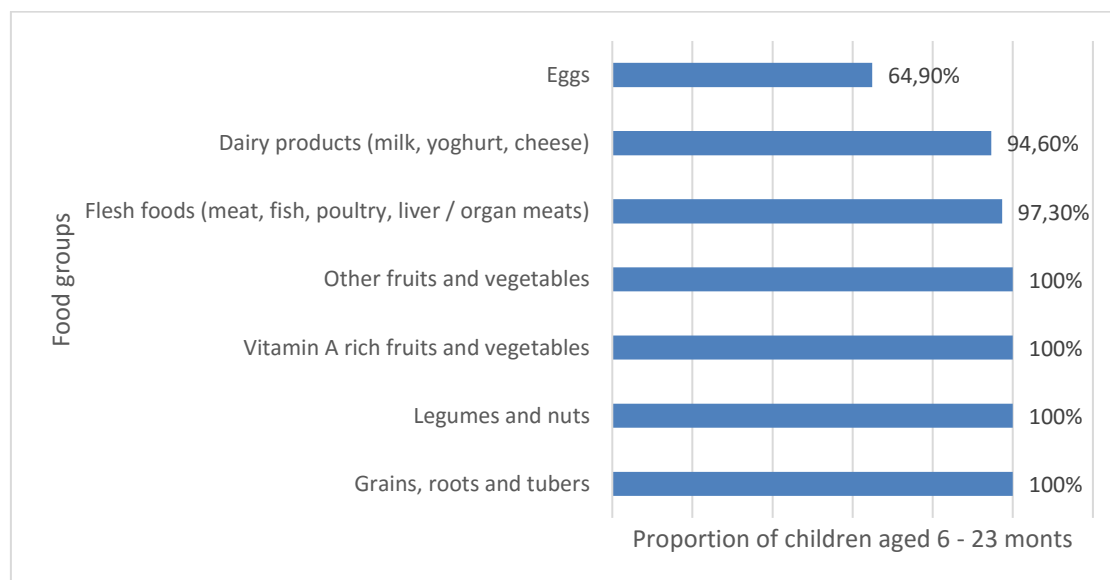


Figure 4.22: Proportion of children consuming various food groups

Children's consumption of other less nutritious, high energy foods was also assessed. Approximately 59.5% of children aged 6 to 23 months assessed consumed sugary drinks such as soda/fizzy drinks, while 37.8% consumed foods such as pastries, cakes, chocolates, sweets or candies. A further 83.8% of children assessed

reported consuming tea or coffee. These findings are summarised in Figure 4.23. This aspect was not assessed at baseline.

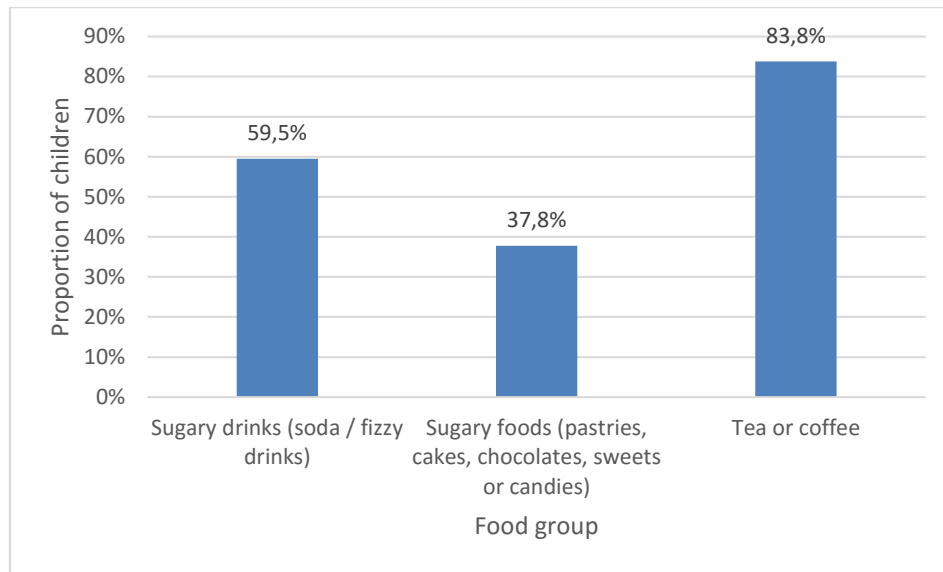


Figure 4.23: Consumption of high energy, less nutritious foods by children

## **Chapter 5: Results (findings and analysis of qualitative data)**

### **5.1 Introduction**

Qualitative data was collected, mainly through FGDs with nutrition BCC groups, and partly from open-ended questions in the household in-depth interview questionnaire and the KIIs. An observational, rapid market assessment was also conducted to determine the role of markets in supporting the increased demand for nutritious foods in the district, if any. Perceptions about the intervention's effectiveness as well the activities implemented by the project were assessed through KII with intervention personnel. Participants' food knowledge, factors affecting household food consumption, barriers and enablers to optimum food consumption and perceptions about the intervention were assessed through open-ended In-depth interviews. Participants' perceptions on their benefits from the intervention, sustainability of adopted practises and the effects of culture and socio-economic factors on adoption of new practises were assessed through FGDs. The results of the analysis of this data are described in this chapter.

### **5.2 Nutrition BCC activities implemented by the LFSP-INSPIRE intervention**

This section outlines the results of the assessment of nutrition BCC activities conducted by the LFSP-INSPIRE intervention and the perceptions of the intervention's effectiveness obtained from key informant interviews (KII) with intervention staff.

Five LFSP-INSPIRE intervention officers (n=5) involved in the running of the intervention's nutrition component (ENIPPA Circle BCC methodology) were randomly selected for KII. An interviewer-administered the questionnaire that was used to obtain data on what the intervention did to promote healthy and nutritious food consumption behaviours and their views and perceptions on their effectiveness.

#### **5.2.1 General description of key informants**

Of the five interviewed key informants, three were less than 30 years of age (21, 25 and 28 years old, respectively) while the other two were aged 45 and 48, respectively. Four were female and one was male, while two were government Ministry of Health and Child Care (MoHCC) EHT staff members, supporting the implementation of the intervention in the communities. The rest were NGO officers implementing the intervention. The two EHTs had worked in the area for more than three years, while the three intervention officers had spent two years or less working on the intervention in the area. All five key informants had either a college diploma or a university degree.



### **5.2.2 Nutrition BCC activities implemented by the intervention**

Participatory methods such as songs, poems, drama, discussions and food fairs emerged as the most common methods that were used to promote healthy eating behaviour change. The songs, poems and drama contained the key messages promoted by the intervention and were composed by the group members themselves under the leadership of the group facilitator.

“We grouped women with children under the age of five years in groups of up to 15 people, and took them through various lessons to promote good nutrition,” said one key informant.

“Other activities we did in ENIPPA were construction of micro-gardens where we assisted farmers produce different types of crops, some of which they had neither grown nor consumed before,” mentioned the same key informant.

“Some groups also included small livestock production and produced both indigenous and broiler chickens. This was done to help households produce a variety of food to help them improve their diets and meet the promoted healthy eating behaviours,” said another informant.

“Group membership ranged from eight people to about 16 people. Functionality of the groups depended largely on the group facilitator – those with very active facilitators who followed up on their members really thrived and achieved a lot. Those with not very committed facilitators did not do so well,” mentioned another key informant.

The informants also reported that there were a few dropouts in some groups after the formation. The main motivation for most participants was the possibility of graduating at the end of the six month period and having gone through and practised all the behaviours.

“The graduation ceremonies appeared to motivate a lot of people to participate. In the process; however, a lot of the participants had some life changing experiences that made them truly convinced of the practises and behaviours that were promoted,” mentioned one key informant.

The key informants further mentioned that lessons focused on pregnant and lactating women, the chronically ill, and children under the age of five years.

“Exclusive breastfeeding was promoted for all children from birth to 6 months. A “four star” diet was promoted for children from 6 months to 24 months. Hygiene and sanitation promotion was done through

promoting establishment of fabricated hand washing facilities, promoting use of latrines including establishment of cheap/affordable alternatives,” mentioned one key informant.

Training on the production of a wide variety of crops throughout the year was done using the Healthy Harvest Training Manual.<sup>12</sup> Activities targeted all circle members who were pregnant, lactating women, mothers or primary care-givers of children under the age of five years.

### **5.2.3 Perceived intervention success, effectiveness and its assessment**

The consensus among key informants was that the intervention was a success, considering the fact that it managed to introduce new nutritious farming practises (micro gardens), making food more accessible and affordable than before; educated intervention beneficiaries about healthy eating and the various nutritious foods; hygiene and sanitation was promoted, as well as general healthy eating behaviours and food consumption patterns within communities. However, key informant four raised an important observation:

“It was very successful, especially to the groups who were reached by the intervention. However, it did not reach all the targeted number of farmers because the intervention period was short and there were only 2 Nutrition field officers covering the whole district. Most people who were reached by the intervention testified on the change of behaviour to healthy eating and the consumption of safe foods.”

Key informants’ views on intervention success were mostly that it was successful as it managed to promote consumption of balanced diets in intervention households, increase meal frequency for children aged 6 to 59 months, increased the number of exclusively breastfed children under the age of 6 months and that women were now able to prepare four star meals for their children at least three times a day. Some reported that women had increased their consumption of iron rich foods and their understanding of affordable iron rich sources had increased. However, the low coverage of the nutrition BCC activities in the district was mentioned as a significant hindrance. Intervention coverage was reported to be very low to achieve meaningful impact. Shortage of seeds for all ENIPPA participants was also mentioned, including the shortage of staff to effectively monitor the intervention.

Key informants reported that the intervention was evaluated through the collection of baseline data on key indicators related to the behaviours promoted at the beginning of each cycle and after the 6 month cycle. However, this data was still analysed, to accurately report on success and effectiveness or the lack thereof. Process monitoring was conducted by intervention staff to check on basic things such as the establishment

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<sup>12</sup> This is a training manual developed with technical support of FAO in Zimbabwe in collaboration with other stakeholders including the Food and Nutrition Council, MoHCC and MAMID. It is a manual for community workers on the growing processing and prepartion of healthy food. It is often used to conduct nutrition training for non-nutritionists working directly with communities.

of hand washing facilities, construction of fuel-efficient stoves and observing food preparation and feeding practises for children. Review meetings were also conducted with circle facilitators and the reports of this indicated that knowledge had significantly improved, and most circle members were practising the promoted behaviours. Intervention participants' testimonies including on exclusive breastfeeding was also used to monitor uptake and practising of promoted behaviours.

#### **5.2.4 Technical support given to households and its adequacy**

Responses from key informants indicated that seeds for various garden crops were given to farmers to facilitate the initiation of micro-gardens. Supervision and monitoring (home visits), food fairs/food preparation demonstrations platforms and information provision were the most mentioned other forms of support which intervention implementers afforded intervention beneficiaries. The seed packs included biofortified crop varieties – vitamin A orange maize and iron and zinc beans

On being asked about their perceptions on the adequacy of the support provided to participants to promote the demand for nutritious foods, key informants' responses were mixed. Some felt it was adequate because home visits helped in motivating participants, and support towards crop production helped increase food availability in the home. Those who felt that the support was inadequate mentioned that the seed provided did not reach all intervention participants, some people struggled to construct the keyhole gardens which required participants to gather many stones and heaping them to elevate the gardens. Some also felt that there was not enough intervention staff to monitor and provide support and supervision to circle members.

#### **5.2.5 Challenges faced during the intervention and lessons learned**

The challenges mentioned were many and varied. Various participants in the FGDs and In-depth interviews also raised this issue. Other challenges mentioned by key informants included:

- The effects of the El Nino induced drought in 2016, which affected food production and household food security. Gardening activities couldn't be done in most areas during the period July to December 2016.
- Poor access to clean and safe water and a lack of resources to construct latrines
- Shortage of seeds distributed by the intervention. Many participants had to share the small packs.
- Inadequate monitoring due to shortage of intervention field staff.
- Negative energy from non-circle participants, which although the participants managed to ignore during the intervention could become an issue after the intervention.
- One key informant mentioned that the participants required income-generating interventions to enable raising money needed to adequately source foods to help diversify diets and improve household sanitation.

The lessons learnt by key informants appeared a bit divorced from lessons learned by intervention participants. While intervention participants learned about the direct benefits of the intervention, as well as its contribution to their health, sanitation and hygiene, the key informants seemed to have learned about the processes and the concept of behaviour change based on the actions of participants and the impact of the intervention. Informants reported the following as some of the lessons learned:

- Knowledge is vital to behaviour change, although on its own it is not enough to ensure behaviour change. The best way to promote behaviour change is to use participatory methods through activities that engage farmers to implement what they are learning at household level. People learn faster when actively participating in activities.
- Staying and eating healthy does not require a lot of money, there is a lot that people can do with the little resources they have, combined with hard work.
- A lot of the poor food consumption behaviours of farmers, had been due to the lack of knowledge. Continuous support is necessary to ensure farmers sustain the new practises learned.
- Behaviour change is a process that takes time.

The key informant interviews showed that the intervention implemented a lot of the activities as planned during intervention design. However, some activities could not be delivered according to plan due to a shortage of resources – such as inadequate staff complement to effectively monitor and implement the intervention, shortage of seeds for all participants, and low coverage of the nutrition BCC activities, which ended up not reaching all the intervention beneficiaries in the Makoni district.

### **5.3 Food knowledge, food consumption barriers, enablers and perceptions.**

In-depth interviews were conducted with 30 women and 10 men selected through purposive random sampling as outlined in Chapter 3. The close-ended questions collected quantitative data, which was presented in Chapter 4. This section highlights key findings from the open-ended questions, which sought to establish the participants' knowledge about healthy eating, factors affecting household food consumption, including barriers and enablers of diversified food consumption and perceptions about benefits of the LFSP-INSPIRE intervention. Although the study population was stratified into two clusters; AER 2B and 3, there were no differences in the responses provided by participants from either group. As such the results were reported jointly for both clusters.

#### **5.3.1 Participants' knowledge about healthy eating**

The benchmark for measuring participants' understanding of a balanced diet was based on the use of the terms '*Kudya kunovaka muviri*', meaning food that nourishes the body or '*Kudya kune mapoka mana*',

meaning a diet consisting of four main food groups or mentioning the food groups (carbohydrates, proteins, vitamins, minerals and fats and oils). The definition was expected to include at least one, two or all three mentioned above. The analysis considered the overall number of counts/mentions or people who mentioned any of the three in the definitions provided. Table 5.1 summarises the participants' responses.

Table 5.1: Participants' understanding of a balanced diet

Emerging themes	Total number of mention (n=40)			Proportion (%)
	Male (n=10)	Female (n=30)	Total (n=40)	
<i>Kudya kunovaka muviri</i> (food that nourishes the body)	9	21	30	75%
<i>Kudya kune mapoka mana</i> (four food groups)	7	15	22	55%
At least four food groups mentioned: carbohydrates, vitamins, proteins, fats and minerals.	5	8	13	32.5%

While the emerging themes were not mutually exclusive, most participants showed understanding of what a balanced diet is.

Another knowledge testing criterion was to assess participants' ability to list the food groups they knew. In all the responses submitted a combination of '**carbohydrates, proteins, fats and proteins**' were mentioned 40 times by 40 participants; thus, all participants succeeded in grouping the major food nutrients that constitute a balanced diet. This indicates basic nutrition knowledge amongst participants.

The study also sought to test participants' knowledge regarding the effects of not eating a variety of food/a balanced diet. Three major sub-themes emerged, as the effects were understood to manifest through nutritional deficiencies, stunted growth and reduced child intelligence – which can be a long-term result of stunting. Both nutritional deficiencies and stunted growth were mentioned by almost all participants and appeared in almost all the answers provided. The most common diseases that were mentioned include '**Kwashiorkor**', '**Marasmus**', distended stomach (*kuzvimba dumbu*) and oedematous legs (*kuzvimba makumbo*). However, child intelligence deficiency emerged some distant third- 15 mentioned times (38%) and consequently, the least mentioned. The general conclusion could be that the health impact of not eating a balanced diet might have triggered interest and awareness among participants. Table 5.2 summarises these findings.

Table 5.2: Participants' understanding of the consequences of not eating a variety of foods/balanced diet

Emerging themes	Total number of mention (n=40)			Proportion (%)
	Male (n=10)	Female (n=30)	Total (n=40)	
Stunted growth/stunting	10	30	40	100%
Child intelligence deficiency	4	11	15	37.5%

The study also requested participants to provide feedback on the benefits they realised from the intervention as well as the main health practises and lessons learnt. '*Kudya chikafu chinovaka muviri kunodzivirira zvirwere,*' translated as **"Eating balanced diet prevents nutritional diseases"** emerged as the dominant theme and significant messages drawn from the intervention and messages conveyed. This was mentioned 39 times or by 39 people, with all men (10) noting this and almost all women. The second most prominent lesson and benefit of healthy eating was that it improves school children's intelligence - **"kuwedzera njere dzevana vechikoro,"** which was mentioned 23 times or by 23 people. This is summarised in Table 5.3.

Table 5.3: Key lessons about healthy eating from ENIPPA

Emerging themes	Total number of mention			Proportion (%)
	Male (n=10)	Female (n=30)	Total (n=40)	
Eating a balanced diet prevents nutritional diseases	10	29	39	97.5%
The four types of food nutrients	0	8	8	20%
Preparing nutritious meals e.g. porridge with kapenta, beans and cowpeas	0	9	9	22.5%
A balanced diet improves children's intelligence	5	18	23	57.5%
Production of nutritious crops	2	4	6	15%
New farming practises	1	2	3	7.5%
Good health for people in health- risk situations e.g. people living with HIV as well as pregnant women and their unborn babies	2	10	12	30%
Improved wellbeing of children and family	1	5	6	15%

Participants were asked what determined the food they ate as a household; six food demand and consumption factors were observed. The most common factors were: household income (*mari*) (40 mentions or mentioned by all 40 people), quantity of the harvest from the field or garden (*'goho'*) (n=31); and quantity of household food reserves "*Huwandu hwechikafu chinenge chiripo pamba*" (n=20). These are illustrated in Table 5.4

Table 5.4: Determinants of household food consumption

Emerging themes	Total number of mention			Proportion (%)
	Male (n=10)	Female (n=30)	Total (n=40)	
Household income	10	30	40	100%
Harvest	6	25	31	77.5%
Family dynamics e.g. size and children food preferences (Culture)	3	10	13	32.5%
Quantity of household food reserves and market dynamics	5	15	20	50%
Balanced diet/nutrients drive	3	4	7	2.5%
Availability of variety of foods	0	1	1	17.5%

Since children are normally prioritised for feeding in the household, particularly when food access is poor, the study sought to assess participants' understanding of the demand and consumption factors that influence children's diets. The study established that children's food preferences - "*zvinodiwa nemwana wacho or appetite yemwana wacho*" (32 times) was a topical theme, followed by household income - "*Kuwanikwa kwemari yekutenga chikafu chinodiwa nemwana wacho*" (31 times), and quantity of food reserves "*huwandu hwechikafu pamba*" (20 people). These findings are shown on Table 5.5.

Table 5.5: Determinants of children's food consumption

Emerging themes	Total number of mentions			Proportion (%)
	Male (n=10)	Female (n=30)	Total (n=40)	
Household income	8	13	21	52.5%
Children's food preferences and appetite	10	22	32	80%
Quantity of household food reserves	7	16	23	57.5%

Time to prepare meals	3	3	6	15%
Balanced diet/nutrients drive	2	10	12	30%
Availability of children's foods /Market dynamics	4	7	11	27.5%

As a way of measuring barriers and enablers to diversified household food consumption, participants were asked what the major barriers to optimum food consumption were and several themes were drawn from their responses. The main theme and challenge emerged as a lack of funds to either buy food or seed to start growing their own food (39 times). This was followed by, shortage of inputs (37 times), agriculture produce being affected by pests and diseases (12 times), crop failure (6 times) and household food shortages (5 times). Table 5.6 summarises this information.

Table 5.6: Major challenges to optimum household food consumption

Emerging themes	Total number of mention			Proportion (%)
	Male (n=10)	Female (n=30)	Total (n=40)	
Shortage of inputs	10	27	37	92.5%
Lack of funds	10	29	39	97.5%
New foods not accepted by family/children	0	3	3	7.5%
Crop failure	0	6	6	15%
Plant-eating or garden Pests	0	12	12	30%
Household food shortage	0	5	5	12.5%

Participants were asked which new foods they started consuming that they never used to eat before as a result of the intervention and an extended list of foods was provided. The new foods included bio-fortified maize and beans and a variety of exotic and indigenous vegetables as highlighted in Table 5.7.

Table 5.7: Changes in food consumption as a result of the intervention

Foods commonly eaten before the intervention	New foods now commonly eaten as a result of the intervention
<i>Sadza</i> (Stiff maize-meal porridge)	Vitamin A Orange maize, rice
Vegetables, <i>muboora</i> (pumpkin leaves), <i>nyevhe</i> (Cleome gynandra L)	Green pepper, green beans, peas, butternuts, carrots, blackjack, spinach, Okra, <i>mufushwa</i> (dried vegetables)
Fish	<i>Chimukuyu</i> (dried meat), milk, pork, eggs, <i>madora</i> .
Beans, fruits, tea, bread	Bio-fortified beans



	Porridge with crushed dried small fish/beans or cowpeas
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Sustainability of gains made during an intervention amongst communities is essential if meaningful change in nutritional status is to be realised in a population. On being asked whether the new practises were sustainable, most respondents (39 times) indicated that all practises could be easily sustained because they had gained new knowledge, which will continue to motivate them to practise what is good for them and their families. Six respondents mentioned that they were going to share the knowledge and information with relatives and neighbours. Some respondents (7) mentioned that sustainability was easy because they could now produce the required variety of foods in their own gardens. These responses are summarised in Table 5.8.

Table 5.8: Sustainability of acquired healthy eating practises

Emerging themes	Total number of mention			Proportion (%)
	Male (n=10)	Female (n=30)	Total (n=40)	
Knowledge sharing	1	5	6	15%
Continued practise of healthy eating	10	29	39	97.5%
Continuous production of nutritious foods	1	6	7	17.5%

### 5.3.2 Results of participants' perception of benefits from the intervention

Focus group discussions were conducted with purposively selected ENIPPA circles of mixed men and women. The main purpose of these discussions was to obtain further understanding on changes in food consumption due to the LFSP-INSPIRE intervention, the factors affecting these changes, if any, and how culture and food supply was affecting this change. Information from these discussions will be triangulated with qualitative and quantitative information from the in-depth interviews to increase the validity of the study results.

#### 5.3.2.1 The impact of ENNIPA on food preferences

A person's food preferences can be used as a proxy for food demand and can indicate a person's knowledge about healthy eating and their willingness to seek these foods, either from the market or own production. The latter is an indication of the demand for the foods. The more varied the food preference, the higher the chances of meeting all nutrient needs. All eight FGDs mentioned an extended list of preferred foods reflecting variety and coverage of all food groups as highlighted in Table 5.9.

Table 5.9: Food preferences highlighted by FDGs

FGD	Participants' responses – What are your food preferences in general?
FGD A to D	Rice, <i>sadza</i> , peas, groundnuts, butternuts, beef, chicken, pumpkins, spinach, carrots, milk. Beans, orange maize, bananas, blackjack, dried pumpkins ( <i>madosana</i> ) rice, potatoes, cowpeas, peanut butter.  ( <i>covo</i> , <i>rape</i> ), sorghum, roundnuts, mango, oranges, eggs, fish, milk, carrots, green pepper, tomatoes, <i>sadza</i> , <i>matemba</i> , fish, <i>mahewu</i> , mushroom ( <i>howa</i> ), dried vegetables ( <i>mufushwa</i> ), soyabeans, avocados, peas, lettuce, mangoes.
FGD E to H	<i>Sadza</i> , beans, chicken, pumpkin leaves, spinach, peas, butternuts, <i>madora</i> , fruits, rice, beef, eggs, potatoes, liver, groundnuts.  Vegetables ( <i>rape</i> , <i>covo</i> , cabbage), insects ( <i>mandere</i> ), dried small fish (kapenta), yums.  Cowpeas, carrots, peas, bananas, mangoes, soyabeans.  Pumpkins, dried cabbage, apples, <i>mufarinya</i> , sweet potatoes.

Participants' responses on the impact of the ENIPPA intervention on food preferences indicated that the intervention gave them knowledge, which influenced their food preferences. Participants reported conscious eating, avoiding just filling stomachs, but ensuring variety and nutritional benefits. Participants also learned the nutritional benefits of foods they used to avoid through the intervention, resulting in them including them on their preferred foods list. The main responses are highlighted in Table 5.10.

Table 5.10: Impact of the LFSP-INSPIRE intervention on food preferences

FGD	Participants' responses – How have your food preferences been affected by the intervention and your participation in this group?
FGD A to D	<p>"The micro-gardens have enabled us to have a variety of vegetables in our homesteads." (X2)</p> <p>"We now know the different methods of cooking food, hence making the dishes more palatable." (X3)</p> <p>"Our children now like their porridge with kapenta and cowpeas."</p> <p>"We are now eating a four-star diet, a meal which consists of all the nutrients in their right amounts."</p> <p>"<i>Tave kugona kudya kwakanaka kwete kungozadza dumbu.</i>" (We no longer eat just to fill stomachs but ensure we meet nutrient requirements).</p> <p>"We used to dislike vegetables like spinach and blackjack but through ENIPPA we got to understand their importance in the body, so we now include them in our daily meals." (X4)</p>

FGD	Participants' responses – How have your food preferences been affected by the intervention and your participation in this group?
FGD E to H	<p>"We now eat with the knowledge of what we get from the food."</p> <p>"There is now variety in our meals." (X3)</p> <p>"We are able to grow the types of vegetables we want in our micro gardens." (X2)</p> <p>"ENIPPA has changed our diets and the way we view our health and eating."</p> <p>"It has enabled us to access nutritious food on our own, as we now know the functions in the body." (X2)</p> <p>"We now eat foods like butternuts and peas, since we can now grow these on our own."</p> <p>"We now know the different methods of cooking food, hence making the dishes more palatable."</p> <p>"Our children now like their porridge with kapenta and cow peas."</p>

### 5.3.2.2 The impact of ENIPPA on individuals and households

Lessons learned in the nutrition BCC groups were similar in all groups and across AERs. The reported lessons were the same as the targeted behaviors and practises promoted by the intervention. While not everything learned had to do with increasing demand for nutritious food, it is important to note that participants gained knowledge and could remember what they had learned, which is a first step towards behaviour change. Some of the key highlights of what participants interpreted from the lessons are highlighted in Table 5.11.

Table 5.11: Summary of key lessons learned from ENIPPA

FGD	Participants' responses – What have you learned from participating in this circle?
FGD A to D	Using natural herbicides, pesticides and liquid fertilisersX2
FGD E to H	<p>"To stay healthy," - <i>hutano</i></p> <p>"Eating a four-star diet,"</p> <p>"Using natural pesticides in gardens,"</p> <p>"Different recipes through cooking demos,"</p> <p>"Eating a rich meal consisting of all nutrients,"</p> <p>Making pot racks:</p> <p>"ENIPPA has created unity in this area; people are now working together and helping each other."</p>

FGD participants from the 2 AERs reported a significant impact of ENIPPA lessons on themselves and their families. The impact ranged from increased health awareness to income and expenditure savings through own household food production. The common responses from participants are highlighted in Table 5.12.

Table 5.12: The impact of ENIPPA lessons on participants and their families

FGD	Participants' responses – How has what you have learned helped you and your families?
FGD A to D	<p>Easy access to vegetables to eat daily.</p> <p>"We are now using less firewood due to fuel efficient stoves." X2</p> <p>"Our families are healthy because they are now eating balanced meals and staying in hygienic places." X4</p> <p>"We now have less water challenges in our gardens as we have learned to use waste water in keyhole gardens."</p> <p>"With tippy taps- water is now easy to access after using the toilet."</p> <p>"We can now afford to buy basic commodities after selling what we have in our gardens."</p> <p>"It has increased bonding between families as now husbands love their wives more, while mothers have been taught to give their children adequate attention."</p> <p>"We are now working using our own hands, less money is involved."</p> <p>"We can now access different types of vegetables unlike before."</p>
FGD E to H	<p>"We can now take care of our families well."</p> <p>"We learnt how to grow vegetables in a good way that they grow well."</p> <p>"Our children are now growing healthy because of exclusive breastfeeding and the knowledge on complementary feeding."</p> <p>"There is peace in our homesteads, husbands now love their wives more due to hygiene and that they are being served warm food as a result of using fuel efficient stoves."</p> <p>"With income from selling excess vegetables we can now buy other basic commodities."</p> <p>"Vegetables are now easy to access."</p> <p>"We now have a variety of foods in our meals."</p> <p><i>"Vanababa mudzimba vavekugonawo kunonyoresa kuclinic nemadzimai avo anenge akazvitakura</i> (fathers are now accompanying their pregnant wives to the clinic for ante-natal care)."</p> <p><i>"Tave kuzivawo mhando yechikafu chekurongedzera vana vedu varimuzvikoro kunyanya vari ku ECD</i> (we now have the knowledge on what the type of food for to pack in our children's lunch boxes for school)."</p> <p><i>"Tave kukwanisa kurera vana vedu zvine utano</i> (we are now able to use improved child care practises)."</p>

Participants reported many new practises in their homes as a result of the ENIPPA lessons. Many of the reported practises were in line with the various aspects taught in ENIPPA: preparing a four star diet, improved

hygiene, and use of hand washing facilities (tippy taps). There was no difference between the two agro-ecological regions as highlighted in Table 5.13.

Table 5.13: New practises as a result of ENIPPA Circle lessons

FGD	Participants' responses – What new things have you been practising at home as a result of what you learned here?
FGD A to D	<p>"Use of fuel efficient stoves and <i>tsotso</i> stoves."</p> <p>"Tippy taps; we can now wash our hands after using toilet." X5</p> <p>"Use of waste water to water our keyhole gardens." X4</p> <p>"Hygiene and sanitation in homesteads." X4</p> <p>"Eating balanced meals." X4</p> <p>"We can now make our own fertilisers hence, saving money."</p> <p>"Establishing and managing keyhole gardens."</p> <p>"Intercropping in gardens."</p> <p>"Food preservation."</p>
FGD E to H	<p>Use of fuel-efficient stoves and <i>tsotso</i> stoves.</p> <p>"With tippy taps, we can now wash our hands after using the toilet."</p> <p>"We can now prepare a four-star diet."</p> <p>"We are now able to prepare a balanced meal. – <i>Tave kudyawo zvikafu zvakasiyana-siyana, kwete kungoti sadza nevegge mazuva ose.</i>"</p> <p>"We now have backyard butcheries from poultry rearing."</p> <p>"Feeding our babies on time."</p> <p>"Hygiene in homesteads has improved."</p> <p>Keyhole gardens.</p> <p>"We now wash our hands after using the toilet."</p>

### 5.3.2.3 Changes in family food consumption patterns as a result of ENIPPA

As far as food consumption and dietary patterns for children are concerned, the groups reported an improvement in diet quality with large variety and new methods of food preparation as a result of their participation in ENIPPA circles. Groups also reported significant changes in IYCF practises, ranging from improvement in EBF to increased number and quality of meals fed to children daily. The participants also reported consumption of new crops introduced by the intervention such as bio-fortified maize and beans. Key highlights are summarised in Table 5.14.

Table 5.14: Food consumption pattern changes among families, women and children as a result of ENNIPA.

FGD	Participants' responses – How has your food consumption patterns as women, your children and families changed as a result of your learning?
FGD A to D	<p>"We now use different recipes."</p> <p>"We are now eating balanced meals."</p> <p>"There is now variety in the foods that we eat."</p> <p>"We are now having three main meals each day."</p> <p>"Zvekudya zvave kuwanikwa zvakawanda panguva imwechete (we now have a lot of foodstuffs to eat at any given time)."</p> <p>"There is now variety in children's meals like porridge for babies we now add <i>matemba</i> (kapenta) cow peas."</p> <p>"We are now eating bio-fortified crops such as Vitamin A orange maize, NUA-45 sugar beans."</p> <p>"Infants are being breastfed 8 to 12 times a day."</p> <p>"Breakfast meals are now more filling."</p> <p>"We used to like tea a lot which has changed as we now know that we do not get anything from it rather it reduces the absorption of some important nutrients by the body."</p> <p>"We now have an easy way of cooking beans, which take less time hence saving fuel."</p> <p>"Proportions of foods are now appropriate."</p> <p>"<i>Mubikiro wachinja mavegetables haachakwatiswe kwenguva yakareba nekuti tave kuziva kuchengetedza ma vitamins</i> (recipes have changed, vegetables are now being cooked for 10 to 15 minutes to preserve vitamins)."</p>
FGD E to H	<p>"We are now having 3 main meals a day." X2</p> <p>"Variety in our meals, we no longer eat the same foods every day. <i>Sadza necovo everyday yaashoma</i> (pap and green vegetables alone are no longer our main diet)." X3</p> <p>"Children are now being fed on time."</p> <p>"Minimum junk foods for children. We are no longer buying puffed corn snacks and freezits for our children."</p> <p>"We are now eating a rich diet."</p> <p>"We are now eating warm food due to FES."</p> <p>"Our children now enjoy eating due to the use of different recipes."</p> <p>"We are now eating a balanced diet."</p>

Dietary pattern changes affected women and households. Groups reported increased awareness of nutritive value of foods, which was now informing the foods they ate. Meal portions, variety and frequency had improved for the better, see Table 5.15.

Table 5.15: The impact of ENIPPA on women's and household consumption patterns.

FGD	Participants' responses – What has changed in your eating behaviours?
FGD A to D	<p>"The frequency in the number of meals we now eat."</p> <p>"We are now eating on time."</p> <p>"We are now eating the right proportions of foods."</p> <p>"We now have increased knowledge and understanding of nutrients."</p> <p>"We work hard in our gardens and fields. Rearing poultry."</p> <p>"We can now easily access vegetables at our own homesteads. We are now eating meat due to poultry rearing."</p> <p><i>"Kutsvaga mazano kubva kune vamwe tichinzwa mhando yechikafu chavanodya mudzimba dzavo</i> (asking from other families what they eat)."</p> <p>"We now consume nutritious food through working hard in our micro-gardens where we can grow butternuts, peas, spinach and pepper and poultry rearing where we can get meat and eggs."</p>
FGD E to H	<p>"We now select the type of foods to eat with the knowledge we possess."</p> <p>"We learnt about eating various foodstuffs not to continuously eat one type of food for one to acquire all the necessary nutrients."</p> <p>"We now have 3 main meals per day."</p> <p>"We are now including vegetables like spinach in our meals."</p> <p>"We are now eating the right proportions of foods."</p> <p>"The foods we are now eating have changed because we are now knowledgeable enough and we are capable of working hard in order to improve our homesteads. We are now eating high quality food which is well balanced."</p> <p><i>"Zvavenyore nekuti tave kuzvirimira, tave kukwanisa kuwanawo mari yekutenga zvimwe zvidyiwa zvakaita senyama kubudikidza nekutengesa zvatinenge tarima mugadheni</i> (the gardens have helped us financially as we are now able to sell some of the vegetables and buy meat to add variety to our meals)."</p> <p>"The ENIPPA volunteers taught us well. We complied and implemented what we were taught."</p>

Healthy eating practises will be difficult to adopt without access to the necessary foods. While most of the participants in the LFSP-INSPIRE intervention are farmers who can produce their own foods, local and distal markets could still be a viable source of food. Participants were asked what the main sources of most of the food they eat were, and the responses pointed to local production and distal markets. The common responses are summarized in Table 5.16.

Table 5.16: Sources of food in the area and the reliability of local markets on providing these nutritious foods.

FGD	Participants' responses - Where do people in this group get most of their food and how reliable are local markets in providing nutritious foods?
FGD A to D	<p>"Our gardens are a reliable source for us to continue eating healthy provided we have the seeds. Our local markets do not supply us with nutritious foods."</p> <p><i>"Vanhu varikunyanya kuwana miriwo mumagadheni misika yekuno haitengesi chikafu chinovaka muviri (most people rely mostly on their gardens and fields as their food sources as the local markets are not reliable)."</i></p>
FGD E to H	<p><i>"Magirosa edu haatengesi chikafu chinovaka muviri (our local markets do not sell nutritious foods)."</i></p> <p>"We rely mostly on our fields and gardens to supply us with nutritious foods."</p> <p>"We get most of foods from our gardens and fields which are quite reliable sources provided we have the seeds and enough rainfall. Our local markets are not reliable to provide us with nutritious foods."</p>

Most groups reported that implementing the changes learned from ENIPPA were relatively easy, as it also empowered them to do most of the things themselves, without the need for a significant income injection. Some of the key responses are summarised in Table 5.17. There were a few practises learned; however, that participants reported a bit difficult to practise, such as constructing keyhole gardens and the fuel-efficient stoves for those women who stayed with in-laws".



Table 5.17: Ease of practising and applying learned techniques.

FGD	Participants' responses – How easy has it been to practise what you learn here about eating healthy?
FGD A to D	<p>"It has been easy due to hard work and no money needed to implement what we had been taught."</p> <p>"It has been easy because we work as a team helping each other."</p> <p>"Most inputs are locally available."</p> <p>"It was a little challenging ferrying stones for the keyhole gardens, but we managed to seek assistance from others."</p> <p>"It has been easy because we tend to concentrate on a small piece of land where we can yield a number of crops, e.g. the keyhole garden you can grow a variety of crops on a small portion of land."</p> <p>"There was a shortage of seeds."</p>
FGD E to H	<p>"It has been easy as most practises do not need any use of money, it is mostly labour."</p> <p>"Some people did not own kitchens hence it was a little challenging for them to construct fuel-efficient stoves."</p> <p>"It has not been easy ferrying stones for the construction of keyhole gardens."</p> <p>"Less labour is required since the micro gardens are small."</p> <p>"Most inputs are locally available and can be easily accessed."</p> <p>"It has been easy because we would work as team."</p> <p>"Less water shortages encountered due to the use of keyhole gardens."</p> <p>"It has been easy because we were taught so well, and we understood hence no difficulties faced during implementation."</p>

Participants reported several challenges faced during the intervention implementation period, which affected delivery of messages and lessons and the adoption and practise of learned behaviors. These included a shortage of initial seed packs from the intervention, minimal male participation, lack of support from non-circle members and stolen materials used to practise learned behaviours. It is important to note that these factors have a huge bearing on the full adoption and sustainability of adopted behaviours, see Table 5.18.

Table 5.18: Challenges encountered in ENIPPA circles.

FGD	Participants' responses – What challenges have you faced and how have you overcome them?
FGD A to D	<p>"Less male participation-we managed to persuade other men to join us."</p> <p>"Non-circles participants now begging for vegetables from our gardens –we share and encourage them to have micro gardens."</p> <p>"People are stealing from our gardens-educating our neighbours on micro gardens."</p> <p>"Less male participation in our circles, the wives managed to convince their husbands to come for circle sessions."</p> <p>"Shortage of seeds-sharing and buying more seeds from our own pocket."</p> <p>"Plastic bottles from our tippy taps could get stolen-we would remove them at night and then put back at night."</p> <p>"Lack of support from non-circle participants on practising hygiene and sanitation."</p> <p>"Some seeds did not germinate-use of our own money to buy seeds."</p> <p>"Difficulties in constructing keyhole gardens especially in measurements hence we ended up seeking assistance from others who knew and working in groups."</p> <p>"Shortage of time to balance both the gardens and fields."</p> <p>"We could not get any financial support for interventions; this has not been dealt with yet."</p> <p>"Discouragement and lack of support from non-circle participants we gave a deaf ear to what they said."</p> <p>"We had a little difficult in securing plastic bottles to use for tippy taps; in some instances, people could steal the containers we then ended up removing them at night and putting them back in the morning."</p> <p>"Some men did not want their wife to join and attend circle sessions; we then managed to convince them to also participate in the intervention."</p> <p>"Some of the men looked down upon the teachers."</p>
FGD E to H	<p>"Shortage of seeds-we shared so that everyone could get some."</p> <p>"The means to ferry stones to construct the key-hole garden - we worked as a team helping each other."</p> <p>"Some seeds did not germinate-we ended up buying seeds from our own pockets."</p> <p><i>"Vakadzi vechidiki hatisati tane dzimba hatikwanise kuvaka majengetahuni mudzimba dzavamwene, dambudziko iri takarikurira nekuvakira majengetahun pamuti</i> (some participants did not own any kitchens hence they could not build fuel efficient stove, however they ended up building these stoves on trees which proved to be equally efficient to us)."</p> <p>"No financial support for interventions, most the participants ended up engaging in mukando."</p>

### 5.3.2.4 Sustainability of adopted practises

The participants were asked about their perceptions on the sustainability of the practises they adopted as a result of their participation in ENIPPA. Many responses indicated that sustainability was assured because the intervention increased their knowledge and showed them that healthy eating does not need to be expensive. However, a considerable number still gave conditions, including seed availability and access to water for gardening. This is even though a packet of vegetable seed costs very little – less than \$1 and the intervention taught them how to construct low-input gardens (keyhole gardens) that can use wastewater. For some, sustainability was motivated by the need to ensure their families and children were healthy. Table 5.19 summarises participants' responses to the sustainability of adopted practises.

Table 5.19: Sustainability of adopted practises

FGD	Participants responses – Sustainability of adopted practises
FGD A to D	<p><i>“Zvirinyore nekuti chironywa chikapera ticharamba tichidya chikafu chinehutano nekuti ruzivo rwave matiri.”</i> (It is quite easy because we will continue to eat healthy food even after the intervention).</p> <p>“It will be sustainable provided we have the seeds.”</p> <p>“It will be sustainable because will keep on working hard in our gardens and farms.”</p> <p>“We will rear poultry and engage in interventions to have money to buy nutritious foods. However, it could be challenging if we fail to access seeds.”</p> <p><i>“Zvirinyore nekuti tave neruzivo.”</i> (It is easy because we now have the knowledge and understanding).</p> <p><i>“Zvinogona kuzotiremera pakuramba tichitsvaga mbeu vamwe vanokwanisa kushaya saka zvainge zvakanaka tiwane rudzidziso rwekuuchika mbeu idzi.”</i> (It could be difficult in the long run as most of the population will not be able to afford the seeds).</p>
FGD E to H	<p>“It will be mostly easy, but we need access to the seeds for the various crops to continue growing the new crops.”</p> <p>“We can now grow our own vegetables, which are very easy as there is no need to use any money.”</p> <p>“We can now take care of our children and they are growing healthy.”</p> <p>“It can be easy if we continue to have enough water supply and the seeds.”</p> <p>“It will be sustainable provided we have the seeds.”</p>

### 5.3.2.5 Effects of culture on practising learned behaviours

People's culture determines who they are and how they live. Norms and practises that deviate from people's culture are usually a lot more difficult to change and similarly new practises or behaviours that are in conflict

with people's culture are more difficult to adopt and sustain. FGD participants were asked how the ENIPPA lessons and promoted behaviours impacted on their culture. Responses were varied and participants highlighted cultural norms such as withholding certain foods to children and pregnant women, which contradicted with what they learned in ENIPPA. They also mentioned cultural practises where a child under six months had to be given porridge with herbs as part of acceptance into the clan, which contradicts with the exclusive breastfeeding promotion. Table 5.20 summaries some of the key points from this discussion. Some participants also felt that ENIPPA helped demystifying some norms such as those of withholding decent food like eggs and meat from children.

Table 5.20: Effects of culture on practising of behaviors learned through ENIPPA.

FGD	Participants' responses – Is what you are learning / have learned through ENIPPA Circle in line with your cultural and religious norms and beliefs? How similar or different is it?
FGD A to D	<p>“What we learned contradicts our culture especially on the practise of exclusive breastfeeding, as some infants are prone to be given solid foods before the age of 6 months.”</p> <p>“It was difficult to refuse certain herbs from our elders to give to our children.”</p> <p>“Since the intervention started the culture has not been affecting what we learned to a greater extent. The elderly used to encourage giving infants solid foods before 6 months but now they managed to accept the concept of exclusive breastfeeding and they now also encourage pregnant women to register and give birth at clinics.”</p> <p>ENIPPA has strengthened our culture in that we can now afford to cook for our visitors at any given time as there is now a variety of vegetables which are accessible in our homesteads (“<i>ukama igasva hunozadziswa nekudya.</i>”).</p> <p>“<i>Zvikubatsira nekuti vana vaisapihwa nyama kana mazai.</i>” (It's helping because now children can also eat meat and eggs).</p> <p>“Family planning is now efficient as children are being breastfed up to 2 years.”</p>

FGD	Participants' responses – Is what you are learning / have learned through ENIPPA Circle in line with your cultural and religious norms and beliefs? How similar or different is it?
FGD E to H	<p>"It contradicts especially on exclusive breastfeeding; a child should be fed other foods before they turn 6 months. Some family elders support the use of traditional medicines."</p> <p>"Our culture does not affect healthy eating to a greater extent."</p> <p><i>"Tsika yekuti mukadzi akazvitakura haadye mazai nema avocados."</i> (There is a myth or cultural norm that pregnant women are not to eat eggs and avocados).</p> <p><i>"Zvinokanganisa nekuti mwana anonzi anopihwa porridge remusha achangobva kuzvarwa zvinopikisa zvatakadzidziswa ku ENIPPA."</i> (A child should be given some traditional porridge soon after birth which contradicts with what we have been taught in ENIPPA).</p> <p>"Some elders believe in the use of traditional medicines and against the concept of family planning."</p> <p>"It has not been difficult as we now know good child care practises that keep our children safe, the culture has not been affecting us in this area as we now have the knowledge."</p>

Malnutrition, particularly child stunting has the potential to affect a child's growth, cognitive development, and earning capacity later in life. Knowing and understanding these impacts can be a motivator for parents to ensure they prevent it, if they value the well-being of their children. A question was asked on what were the aspirations that, as parents, the group had for their children. Most parents expressed their hopes for intelligent and successful children that grow to be strong, healthy and productive adults. They also hoped their children will do better than they did socio-economically. Some notable responses are highlighted in Table 5.21.

Table 5.21: Parents' aspirations for their children.

FGD	Participants' responses - What are your aspirations regarding your family health and welfare and how does what you have learned here contribute to those aspirations?
FGD A to D	<p>"Long-life."</p> <p>"For us to get food which consists of all nutrients so that our families can grow healthy."</p> <p>"To live and stay healthy."</p> <p>"Long life since we are now eating healthy due to what we learnt in circles."</p> <p>"For our children in the area to grow up healthy and become successful in their study, in our circles we learnt that if children eat healthy and are well taken care of it results in high IQ."</p>

FGD	Participants' responses - What are your aspirations regarding your family health and welfare and how does what you have learned here contribute to those aspirations?
FGD E to H	<p>"For our village at large to be well developed will successful children."</p> <p>"To have adequate food all the time."</p> <p>"I would like my family to be healthy and strong. I want my children to go to school, learn and have a better life than I have now."</p> <p>"We were taught that stunting in children could affect their learning and school performance. Healthy eating and good hygiene in the home can prevent stunting. We hope what we are practising now will help ensure our families and children grow well and healthy."</p> <p>"Long life."</p> <p>"To bring up children with high IQ".</p>

### 5.3.2.6 Participants' perspectives on the impact of ENIPPA on demand for nutritious foods

The overall objective of the LFSP-INSPIRE intervention, for which ENIPPA is a sub-component, is to increase the demand for nutritious foods amongst the target population. FGD participants were asked what their perceptions were on how they thought the intervention influenced their demand for nutritious foods. Responses were varied, pointing to improved knowledge, which affected the foods that participants are now buying and growing. There were no variations between the FGDs from the two AERs as highlighted in Table 5.22.

Table 5.22: The impact of ENIPPA on the demand for nutritious foods.

FGD	Participants' responses - How has your demand for nutritious foods changed as a result of what you have learned in this circle?
FGD A to D	<p>"We can now plant our crops on our own."</p> <p>"We now know the types of foodstuffs to buy."</p> <p>"We are now buying foodstuffs which supply us with nutrients, less junk food."</p> <p>"We can now easily access foods."</p> <p>"We can now afford to have a well-balanced meal as we now own gardens."</p> <p>"Good communication and friendships have developed now we can share seeds and exchange seeds."</p> <p>"We can now get money to buy meat after selling our vegetables and constructing FES for other non-circle participant."</p> <p>"We no-longer just buy food items; we assess to see whether we will be able to benefit from the food we are buying."</p>

FGD	Participants' responses - How has your demand for nutritious foods changed as a result of what you have learned in this circle?
FGD E to H	<p>"We now know the types of foods to buy; we can now use our money wisely."</p> <p>"We can now afford meat after selling vegetables from our gardens."</p> <p>"We now know the nutrients in specific foods, what and how to eat e.g. eating sadza and potatoes is inappropriate."</p> <p>"We are now buying a variety of foodstuffs because we are knowledgeable enough."</p> <p>"We are now including" fancy" vegetables in our meals e.g. .peas and pepper."</p>

## 5.4 Results of the assessment of the local markets

A rapid market assessment was conducted in the areas where FGDs and in-depth interviews were conducted in the form of observations and minimum inquiry through discussions with market players: sellers and buyers. This assessment was guided by the checklist in Addendum 13. The main objective was to assess the local markets' supply of safe, diverse and nutritious foods to people in the area and the factors influencing this supply.

### 5.4.1 Observations made by the researcher from the rapid market assessment

The type of food markets in the area were varied and can be categorised as:

- **Informal markets** – including roadside markets, makeshift stalls at business centres, individuals moving from door-to-door selling their products and farm gate markets at people's fields or gardens.
- **Formal markets** – including established shops or stores at local business centres and traders at formally established market places

The variety and type of foods sold in these markets depended on whether they were formal and long-term markets or informal, short term markets. The latter were operated just to move products obtained at that point or to dispose of excess, perishable products that a household could not utilise before it went bad. The products sold in informal markets tended to vary depending on seasonal availability of mostly fruits and vegetables produced in the area. The foods that were traded during the time of the assessment (December to February) included green leafy vegetables, tomatoes, onions, bananas, indigenous fruits (mazhanje) and maize grain. Another form of informal markets was small livestock producers rearing mostly chickens for sale from their households. Most of these were known in the areas and were regular suppliers in the areas. The more formal markets tended to supply the less perishable foods, including cooking oil, rice, mealie-meal, sugar, salt, juices, various snacks, tea leaves, peanut butter and jam etc. other perishable foods like bread, meat, milk and eggs.



Informal markets tended to have minimum stock if they were buying from producers and reselling, considering their products were mostly perishable. Producers' stock varied with scale of production. Continuity of these markets was not guaranteed and depended mostly on individual seller's need for cash and the availability of produce from their field or garden. Formal markets had significant stock and ways/measures of ensuring continuous supply of their products. The people buying from both formal and informal markets included local villagers, travellers particularly on major roads, and professionals working in clinics and schools in the areas.



Figure 5.4: The most common type of markets in Makoni and the food sold

#### 5.4.2 Results of short discussions and enquiries made with market players

On being asked what the commonly demanded foods in the area were and who were the most common buyers, formal market sellers gave the following responses:

*“tinotengesa chikafu chinonyanyodiwa pamba nevanhu vemunzvimbo ino zvakaita sesugar, masamba, mafuta ekubikisa, chingwa”* translated as “we sell the common foods used by households in this area daily such as sugar, tea leaves, cooking oil and bread”.

*“Vanhu vanonyanyotenga zvinhu zvakaita sechingwa, shuga, flour, mukaka, dzimwewo nguva mazai”* translated as “most people buy products like bread, sugar, wheat flour, milk and sometime eggs”.

*“Tinotengesawo tunhu tudiki tunokurumiza kufamba, twakaita se mabiscuits, masweets, maputi, mazapnacks, masoya chunks, beans nemakokora”* translated as “we also sell small things that are relatively cheap and sell quickly such as biscuits, sweets, popcorn, corn puff snacks, soya chunks and fizzy drinks”.

*“Zvinhu zvinonyanyofamba muno chingwa, makokora, sugar, mafuta netunodyiwa nevana twakaita se masweets and mazapnacks uye zvinotengwa nevhanu vanogara muno kana vari kupfurawo”* translated as



“the commonly demanded foods are bread, fizzy drinks, cooking oil and children preferred foods like sweets and corn puff snacks. These are bought mostly by people from this area and travellers”.

When asked the same questions, informal traders had this to say about the commonly demanded foods:

*“Vanhu vanowanzotenga muriwo nemadomasi zvatinerima mumagardeni edu”* translated as “people mostly buy green leafy vegetables and tomatoes that we grow in our gardens”.

*“Vazhinji vanotenga muriwo wekudya nesadza. Vanhu vazhinji vanozvirimira zvavanodya”*, translated as “Most people buy vegetables to eat as relish with pap. Most people in this village eat what they produce in their households”.

The buyers from these markets responded to question on food demanded from markets and by whom as follows:

*“Ndinotenga muriwo kana tisina mugarden medu. Kazhinji ndinowanzotenga kugarden kwamai..... as pari zvino havapo ndosaka ndauya pano”*, translated as “I only buy vegetables when we do not have them in our garden. I prefer buying from Mrs....’s Garden but unfortunately she is not there right now that is why I came here”.

It was clear from a lot of the responses that people in the assessed areas produced their own food and sought the markets for those foods they could not produce themselves or did not have at that time. Fruits were not sold on the local markets at all. Formal markets tended to supply mostly the non-perishable household foods such as cooking oil, sugar, rice, wheat flour and salt. They also sold the hunger filling foods, supplying mostly energy and little micronutrients such as biscuits and sweets.

Buyers’ preferences drove demand and supply of foods from the local markets and formal market players reported that they always stocked the commonly demanded foods. Informal market players; however, supplied mostly what was in season or what they had access to, which was mostly a result of excess production of the food than they needed for household consumption. Informal markets therefore tended to be seasonal, supplying the perishable foods in season at any given moment while formal markets were not exclusively driven by that. Formal markets; however, reported that there were periods such as during holidays, Christmas and Easter, that demanded for certain, not so commonly consumed, foods such as juices, fizzy drinks and meat. Small livestock producers also reported that they ensured they had chickens ready for the market during the Christmas period, as the demand increased significantly during this time. One chicken producer and seller had this to say about seasonality of food demand and supply:

*“Ini ndinopfuya huku dzemabroiler zvekuti kazhinji ndinenge ndiine dzekutengesa asi dzimwe nguva nekushomeka kwechikafu nemari, hadzisi nguva dzese dzekuti vanhu vanonyanyotenga huku. Nekudaro ndinomboita mwedzi yakawanda ndisina. Asi kazhinji ndinoona kuti munguva yechristmas ndinenge ndiine huku nekuti vanhu vazhinji vanotenga huku dzekudya nehama neshamwari paChristmas.”* This is translated as, “I am a broiler chicken producer and I usually have stock to sell. However due to challenges with feed and socio-economic situation it is not every time that people are willing to buy chickens. As such, I at times go for months without stock. However, I always make sure during Christmas time I have chickens to sell because demand is very high during this period.”

On inquiring whether there was any change in demand for certain foods and possible reasons for this, most buyers and sellers could not say for certain. Most informal market sellers reported that most households in the area were now producing their own vegetables, leading to an increase in availability even for those people who were not producing. Some sellers reported a decrease in sales, particularly of vegetables and attributed this to increased local production in households.

In conclusion of this section, markets in the study area provided households with basic foods for everyday household use. What buyers wanted from formal markets and what sellers had access to for informal sellers determined the supply of the foods marketed. Nutrition was not mentioned at all as a determinant for demand and supply. Reliance on local markets from local villagers was not significant and no change in the demand and supply was reported except for anecdotal evidence of increased household production of vegetables by villagers. These findings will be triangulated with data from in-depth Interviews and FGDs.

All the findings highlighted above will be discussed in the next chapter, Chapter 6, weighing in all the evidence gathered and considering all the farmer perceptions and behaviours reported and exhibited. All this will help in the interpretation of whether the LFSP-INSPIRE intervention’s ENIPPA BCC methodology in the Makoni district effectively increased the demand for a variety of nutritious foods amongst intervention participants’ households.

## Chapter 6: Discussion of findings

### 6.1 Introduction

This study sought to evaluate the effectiveness of nutrition BCC by the LFSP in increasing the demand for diverse and nutritious foods by smallholder farming households in the Makoni district and the influence of social, cultural and market factors on this demand. In doing this, the study expected to answer the central question and three sub-questions as stated under section 1.4.1.

For this study, which took the form of an intervention evaluation, “**effectiveness**” was defined as the degree to which objectives were achieved and the extent to which targeted problems were solved. The main objective of the intervention was “increasing intervention participants’ demand for varied and nutritious diets”, which was meant to address the problem of poor food consumption patterns by households, but particularly women and children. “Demand for nutritious diets” was defined as the willingness to buy or seek by other means; such as own local production, a wide range of foods that are nutritious and nourishing to the body. As such, the study assessed parameters related to participants’ food consumption patterns, their ways of accessing various foods, their knowledge and understanding of nutrition and healthy eating as well as their perceptions and beliefs about foods and how these were influenced by the intervention. It also assessed social, cultural and other beliefs and how they influenced food demand and consumption patterns.

In this chapter, the study findings will be discussed against the study’s central and sub questions as stated here. The discussion will follow the logic of addressing the sub questions first and finally the central question. In addition, explanations on how the results relate to the study expectations will be given, showing the validity of the answers provided by the study results and relating them to what other researchers have observed as documented in literature. As many as possible, patterns, principles and key relationships of major findings will be highlighted in explaining how they answer the key study questions. In ending, this chapter will discuss and highlight limitations and possible weaknesses of the study and how it impacts the validity of the study interpretations.

### 6.2 Stimulating demand for nutritious foods

This study has shown that the LFSP-INSPIRE intervention implemented many activities to stimulate the demand for a wide range of nutritious foods. These activities aimed at increasing availability of the actual food mainly through supporting production as well as increasing participants’ knowledge and understanding of the need for diet diversification for improved nutrition. As outlined under section 4.1, the situational analysis findings, the LFSP-INSPIRE used the ENIPPA BCC methodology to stimulate demand for varied,

nutritious diets. The design of the ENIPPA methodology targeted the context specific problems related to food demand and consumption, as well as other key behaviours. The barrier analysis methodology used by the ENIPPA is anchored on two behaviour change theories: The Health belief model and the Theory of reasoned action. In line with the recommendations by other authors, behaviour change interventions that are informed by theoretical frameworks are more effective in promoting behaviour change.<sup>171</sup> Through the barrier analysis, the LFSP-INSPIRE identified context specific barriers to practising five key behaviours that are central to stimulating nutrition behaviour change. These are: consumption of iron rich foods, four star diets for children aged 6 to 23 months, establishment of household micro-gardens, preservation of vegetables using solar driers, and the conservation agriculture. By targeting and using various techniques informed by the BC frameworks, the LFSP-INSPIRE had a higher chance of achieving success.<sup>172</sup>

The situational analysis findings showed that the LFSP-INSPIRE reported significant progress with the nutrition BCC at the end of the first year of the intervention, as outlined under section 4.1.7. This included establishment of micro-gardens by more than 60% of the participants, improved knowledge of dietary diversity amongst more than 90% of the circle members, improved household dietary diversity by 64% of the participants' households, and a 20% increase in production of bio-fortified crops by intervention households. Bio-fortification was a new technology, introduced for the first time to the Makoni through the LFSP. To validate this report by the study as observed through the situational analysis, the findings from the in-depth interviews, described under section 4.2.1.2, 4.2.1.3 and 4.2.1.4 of the study findings, further showed significant improvements in dietary diversity for households, and women and children, compared to the findings of the intervention's baseline. These findings will be discussed in detail under section 6.3 below.

The results of the key informant interviews (KII) with intervention staff further confirm that the LFSP-INSPIRE interventions implemented many activities to stimulate and promote an increase in the demand for varied, nutritious diets. As reported by the informants, techniques used in the ENIPPA included use of songs, drama, poems, discussions, home visits, food preparation demonstrations, food fairs and demonstrations for establishing micro-gardens and low input gardens. They reported how women were supported as groups. Activities by the groups included small livestock production; focusing on chickens in addition to gardens as a way of increasing access to diversified foods, particularly those observed to be lacking in the diet such as meat and animal source foods. However, small livestock production in ENIPPA was very limited. Informants also reported how graduation ceremonies were used as motivation to encourage people to join the groups. It gave participants a sense of accomplishment.

Key informants' perceptions on the intervention, as far as stimulating the demand for nutritious foods indicated that through micro-gardens promoted by ENIPPA, participants were introduced to new crops which helped them increase the availability and access to a wide range of foods. The ENIPPA increased participants'

appreciation for dietary diversification, which helped to increase uptake of the promoted methodologies. The informants also reported that the intervention managed to promote consumption of balanced diets, increase meal frequency and dietary diversity for women and children aged 6 to 23 months. This is in line with many studies which showed that increasing access to a wide range of foods complemented with nutrition education and BCC is essential in increasing demand for nutritious foods.<sup>173</sup> The key informants indicated that they provided support to participants through provision of basic vegetable seeds (for vegetables like spinach, carrots, beetroot and peas) to start up the gardens. These seed packs included bio-fortified crop seed varieties for vitamin A orange maize and high iron and zinc beans. Other support included facilitating groups' activities, such as arranging food preparation demonstrations, food fairs and conducting household support visits. Literature confirms that support towards increasing production of varied foods is essential for stimulating the demand for nutritious foods.<sup>174</sup>

Findings from the KII were confirmed by the participants engaged through in-depth interviews and FGDs. Participants confirmed that they were now consuming many new foods that they never consumed before the intervention. They also indicated that through the ENIPPA, participants learned about healthy eating, using natural pesticides for sustainable crop production and using different recipes for meal preparation. These findings are highlighted in Table 5.3 and Table 5.10 in Chapter 5. All these activities were done to stimulate the demand for diverse, nutritious foods. FGD participants also confirmed that they relied mostly on their production for household consumption.

The results of this study are broadly consistent with findings from other studies, which show that agriculture production, coupled with nutrition education and or nutrition BCC is essential for stimulating the demand for nutritious foods and promoting diversified consumption at household levels, but also for women and children.<sup>175</sup> Unlike most of the studies documented in literature, this study used a mixed methods approach, which allowed soliciting of participants views, perceptions and understanding of the intervention's efforts towards stimulating the demand for nutritious foods. For instance, while key informants and participants largely agreed that the intervention implemented many activities to stimulate demand for nutritious foods, they also indicated that the scale of the interventions was very small to have a meaningful impact at the district population level. Findings also showed that not all participants received the initial seed packs and although participants were convinced that there was a need to diversify their diets and fully appreciated this, they still did not feel they had the necessary resources to continue producing the required crops and livestock. Participants also lacked income to buy the required foods. They still needed further support to be able to sustain the adopted behaviours. Underlying the apparent lack of dietary diversity among most rural households in the Makoni district and Zimbabwe in general, is deep rooted poverty emanating mostly from the failing national economy. This is further intensified by unpredictable weather changes due to climate change which has affected many small holder farmers' abilities to produce adequate food for their household

consumption. Other findings pointed to the need for more intervention staff to be able to fully support the farmers.

### 6.3 Intervention effectiveness

This study has shown that the activities implemented by the LFSP-INSPIRE were effective in stimulating the demand for a wide variety of foods amongst participants' households, women and children. In addition to the variety of interventions and activities conducted by the LFSP-INSPIRE to stimulate demand for varied and nutritious foods, findings from the situational analysis of the intervention's baseline survey results, and the in-depth interviews with intervention participants indicated a marked improvement in the demand and consumption of varied foods. Although assessed through different means, household food security was better after the intervention than at baseline (before the intervention). At the intervention baseline, an estimated 89.5% of households were reported to be having little or no hunger using the household hunger scale. Using the household dietary diversity score (HDDS), only 26.7% of households were consuming five food groups and less than 24% were consuming 6 or more food groups. The most commonly consumed foods were cereals, vegetables, sugar and fats/oils, consumed by more than 80% of the households, whilst eggs were consumed by only 6%, meat and fish 26.7% and legumes 27.12%. Fruits were consumed by 38.4% of the study population and milk and milk products by 32.2%. In comparison, the study findings from in-depth interviews with intervention participants conducted two years after the baseline revealed that 86.7% of participants' households consumed foods from more than six food groups using the HDDS, and 96.7% of households had an acceptable household food consumption score (HFCS). This study finding indicated that participants fared better after the LFSP-INSPIRE intervention than at baseline, using the more sensitive food and nutrition security indicators.

In addition, at baseline, households were consuming less food groups than observed through in-depth interviews. Similarly, consumption of meat, fish and fruit was higher after the intervention than at baseline, see Figure 4.16 which indicated 65% of households were consuming meat and fish compared to 26.3% at baseline and 96.7% of households were consuming fruits compared to 38.1% at baseline. Households were consuming bio-fortified crops – vitamin A orange maize and beans, as depicted in Figure 4.15. Most of this food came from participants' own production. Bio-fortification is one proven agriculture intervention with proven impacts on nutrition.<sup>176</sup> Several studies have proved that regular consumption of bio-fortified crops can improve micronutrient stores in the body, reverse micronutrient deficiencies and increase resistance to infections.<sup>177 178 179 180 181</sup> As shown in Figure 4.10 and Figure 4.12, following the LFSP-INSPIRE intervention, all households were growing many vegetables including green leafy vegetables, tomatoes, onions, green beans, butternuts, carrots and spinach. Furthermore, Figure 4.11 shows that only 5.3% of households had no

fruit trees. Crop production is synonymous with increased consumption of the crops grown, especially when accompanied with nutrition education and BCC.<sup>182</sup>

This study demonstrated that the ENIPPA behaviour change methodology effectively improved child feeding practises within the two years that the LFSP-INSPIRE intervention was implemented in the Makoni district. Only 12% of children aged 6 to 23 months were receiving a minimum dietary diversity before the intervention. When assessed during the study, all children aged 6 to 23 months (100%) included in the study sample were consuming at least four of the seven food groups included in the calculation of this indicator.<sup>183</sup> Children consuming a diversified diet are more likely to meet their nutrient requirements and be well nourished. As indicated in Figure 4.22, most children were consuming all food groups: grains, roots and tubers 100%; legumes and nuts 100%, vitamin A rich fruits and vegetables 100%, other fruits and vegetables 100%, flesh foods (meat, fish, poultry, liver and other organ meats) 97.3%; milk and milk products 94.6% and eggs 64.9%. This finding concurs with other studies that show that interventions that combine diversified agricultural production with nutrition education and BCC are more likely to be effective in improving child feeding practises.<sup>183</sup> The ENIPPA directly targeted the four star diet for children aged 6 to 23 months as a crucial behaviour to promote. Adequate dietary intake and good health (absence of disease) are directly associated with good nutrition status. The absence of these two is the immediate causes of malnutrition.<sup>184</sup> Absence of one often influences the other, i.e. a child receiving a diet that is deficient in key food groups, and hence nutrients, are more likely to be ill, which in turn affects food intake and causes malnutrition.

The study findings; however, also picked some negative feeding practises, which if continued unchecked could cause problems with overweight and obesity amongst children. In addition to consuming healthy foods, a significant proportion of children were also consuming high calorie, less nutritious foods such as sugary drinks/sodas, pastries, biscuits and sweets, tea and coffee. This is highlighted in Figure 4.23. Zimbabwe, like any other low to medium income country is experiencing the double burden of malnutrition, with a growing problem of overweight and obesity, particularly amongst women and children.<sup>14 16</sup> Unfortunately, consistent with findings from other countries, nutrition interventions continue to focus on undernutrition instead of over nutrition.<sup>185</sup> None of the ten behaviours promoted by ENIPPA focused on overweight and obesity, although it can be argued that the four star diet promotion focused on the healthy food options and so did optimum complementary feeding promotion, which includes both food quality and quantity. However, to be effective in addressing issues of overweight and obesity prevention and control, it may be required to specifically target these behaviours.

The study also showed that women of child bearing age (15 to 49 years old) were consuming diversified diets. This indicator was unfortunately not assessed at baseline. As shown in Figure 4.20, 93.3% of women were consuming foods from at least five of the 10 food groups. The Minimum Dietary Diversity indicator for

women (MDD-W) estimates the likelihood of women meeting their macro and micronutrient requirements from the diet.<sup>186</sup> Women of child bearing age are at risk of micronutrient malnutrition, especially deficiencies of iron, calcium and vitamin A. The MDD-W can be used as a rapid population level indicator for assessing women's dietary diversity.<sup>187</sup> Figure 4.19 shows that more than 80% of women were consuming eight of the 10 food groups, except for the dairy and eggs group consumed by 40% and 63.3% respectively, two years after the intervention started in Makoni. These results for women and children show that eggs were not that widely consumed by the participants in the LFSP-INSPIRE intervention. This observation could have also been caused by a reported taboo forbidding pregnant women from consuming eggs and avocados, reported in Table 5.19. The women's dietary diversity was not assessed at baseline by the LFSP-INSPIRE, so the study was not able to compare the situation during the study time to what was happening before the intervention. However, if the children's feeding patterns are anything to go by, then one can generalise and say they were as worse off as the children's dietary patterns before the intervention. The ENIPPA methodology also included promotion of a behaviour pertaining to women dietary diversity – consumption of iron rich foods. Other targeted behaviours also associated with the improvements seen the inclusion establishment of household micro gardens and preservation of vegetables by solar drying.

It is worth noting that none of the ten behaviours promoted by the LFSP-INSPIRE was the production of animal source foods. It may be the reason why egg consumption was slightly low for both women and children. Consistent with this, Figure 4.16 shows that 54.8% of meat and fish consumed by households was from local purchase rather than own production. This is opposite to Figure 4.11 and Figure 4.12 on crop production, showing that most crops consumed were from own production. In addition to the ENIPPA, the LFSP-INSPIRE intervention also promoted many other agriculture value chains including poultry, goat and eggs. However, these targeted selected farmers with the potential to produce and market their produce. It appears the animal food sources were being bought from these farmers as the rapid market assessment showed that most people in Makoni bought their food from other villagers producing excess, rather than from formal markets.

Complementary to the quantitative findings, both key informants and intervention participants felt that the intervention was effective in promoting the consumption of diversified diets. Participants were able to define a balanced diet and could link child stunting to poor food consumption. Participants indicated that, through ENIPPA, they learned about disease prevention, preparing nutritious meals, food and nutrients and the production of nutritious foods. Findings from the FGDs indicated that the LFSP-INSPIRE intervention helped them to increase their knowledge of healthy eating, the ability to grow a wide variety of crops for improved nutrition, increased their access to many foods including some new crops they had never included in their diets. Participants also reported improved knowledge of food preparation, improved child feeding with increased diversity through enriching maize-meal porridge, which is what children are mostly fed on. Through



the ENIPPA sessions, they were now able to stay healthy, eat diversified diets, cook various foods using different recipes, produce their own foods cheaply and taught them to work hard with their own hands. The mixed methods approach for data collection helped to collect holistic information useful for the evaluation of the LFSP-INSPIRE interventions.

## 6.4 Factors influencing the demand for nutritious foods

This study has shown that agriculture production is both a determining factor and an indicator of the demand for foods consumed by households. Prior to the LFSP-INSPIRE intervention in Makoni, diversified crop production was low – reported as 56% growing one type of crop and 20% and 16% growing two and three types, respectively. This was associated with reduced dietary diversity for both households and children as highlighted above. The findings of this study revealed that agriculture production within the LFSP-INSPIRE intervention was in itself influenced by a number of factors. Key informants reported that the seed distributed to households to start micro-gardens was not adequate and many participants did not receive the seed packs. It would go without saying that the participants that did not receive seed packs may not have produced as much as those who received the seed. If promotion of diversified agricultural production for improved consumption and nutrition was important to the ENIPPA methodology, then efforts should have been made to ensure all the participants received these packs. Seed packs were given for demonstration so as to encourage farmers to buy their own, after experiencing the production, harvesting and tasting the crops during food preparation demonstrations, and also when they learned about the nutritive value of these new crops.

An unexpected finding was that key informants indicated that a lack of money was a challenge affecting continued demand for the promoted/recommended dietary diversity. This finding was consistent with what in-depth-interview participants also thought, in fact household income was reported by all respondents as a major determinant of household food consumption, as highlighted in Table 5.4 and Figure 5.2. This finding was contrary to statements by some key informants as well as many participants themselves who reported that one of the lessons learned from the intervention was that eating healthy should not cost a lot of money. It was; however, in line with some other researchers' findings that household income is a major determining factor of the demand for not only food but other household commodities as well.<sup>187</sup> A vegetable seed pack costs less than US\$1 in many agro-dealer shops in Zimbabwe and this is enough to produce vegetables that can be utilised by a family of up to six, for more than a month. If participants were not prepared or willing to buy these seeds for themselves, following their learning of the benefits and need to diversify production and consumption, then this is a major impediment to increased demand for varied nutritious foods. Similarly, if the increased knowledge about food, nutrition and the importance of diversifying diets is not enough to

motivate people to invest in nutritious seeds to produce nutritious foods, then this poses a great threat to sustainability of the food demand and consumption patterns observed in this study in the Makoni district.

Key informants also reported low coverage of the intervention, meaning some people that had wanted to be participants could not be absorbed. They also reported a shortage of intervention staff to adequately support participants and implement all the intervention activities as planned. This finding is contrary to other findings which indicated as a perception by key informants and some participants that poor food consumption and food demand behaviours by farmers were due to lack of knowledge. Continuous support is necessary to ensure sustained practising of the newly adopted behaviours.

Another observation from this study was that nearly all participants indicated that they were receiving some form of support, with the majority coming from NGOs. Unfortunately, the study did not ask for the form of support, only from where it was coming. The assumption made by the researchers was that the reported support included the LFSP-INSPRE intervention. Food aid or any other external support to households affects the eating practises and behaviours of the concerned households. However, this cannot be expected to be sustainable, nor be used as an indication of an increase in demand for that type of food nor adoption of better eating practises. What happens post this support is what matters most.

This study also revealed that, in addition to income, which was reported to be affecting both household and child feeding practises significantly, other factors include the quantity of the harvest (household food availability and access) and family dynamics – including size and preferences. It appears from these findings that agriculture production is a major determinant and hence an indicator of the food demands in the Makoni district. This can be generalised to all rural communities who rely mostly on what they produce for their food needs. Similarly, lack of agriculture inputs was revealed as another factor affecting food demand.

As far as children's food consumption was concerned, children's food preference was reported to be a major determinant to their consumption patterns. It appears mothers fed children what they liked more than what was healthy and beneficial to the child. It is worth noting that children's palates and food preferences are developed from the foods that they are introduced to by care-givers. Inappropriate foods introduced to children early during initiation of complementary feeding have a bearing on what they prefer to eat as they grow. This finding further cements the importance of care-givers learning about complementary feeding early, before they introduce the foods to children, so they do it appropriately when they start. Timely introduction of the right type of complementary foods is very essential for proper child growth and development.<sup>188</sup>

An interesting finding of this study, which is contrary to other findings and beliefs, was that culture was not a major factor affecting food consumption and food demand aspects promoted by the LFSP-INSPIRE intervention. This could possibly be explained by the fact that the intervention conducted a barrier analysis at the start of the intervention and design the BCC approach informed by the findings. In so doing targeted behaviours were not the culturally contentious ones. It could also be that the studied population does not have many problematic food consumption behaviours that could not be addressed by the BCC approach used. As highlighted in Table 5.19, culture affected mostly exclusive breastfeeding but tended to demystify some cultural practises of withholding certain foods to some family members such as women and children. This finding is very important and empowering because ingrained cultural practises are in some contexts a major barrier to optimal nutrition particularly affecting food consumption.<sup>189 190</sup>

This study also found that parents had high hopes for prosperous futures of their children. Participants were also able to link malnutrition to poor development and cognitive capacity of children, in line with what other researchers have written.<sup>191 192</sup> This finding can be used to actively promote healthy food consumption and demand for diverse nutritious foods with the goal of improving children's nutritional status for better, well developed futures.

Contrary to other research findings, this study revealed that the local markets had very little influence on the demand and consumption of diverse nutritious foods.<sup>193</sup> Local markets were not the major sources of food for the LFSP-INSPIRE intervention participants, who relied mostly on what they produced. Market supply of foods was; however, determined by the participants' demand. Participants only sought those foods they could not produce themselves from the local markets. It appears that these markets were the source of the high calorie, low nutritive value products that some children were consuming, see (Figure 4.23). Given this, if formal markets stocked nutritious foods and went a little further to market or advertise these foods, this has potential to increase demand for these healthier options.

However, farmer-to-farmer informal markets appeared stronger in determining food demand and consumption patterns. Increased production of healthy, diversified crops and livestock in Makoni is therefore likely to increase the demand for these foods by farmers within the district. For example, the study observed that egg consumption was low, and this could possibly be because of low egg production by farmers in the area, although participants also mentioned that it was taboo for pregnant women consuming eggs. Unfortunately, the study did not look much into small livestock production but concentrated more on crop production. This was one major limitation of the study.

## 6.5. Study limitations

One of the major limitations of this study was not relating the food demand and consumption patterns to the nutritional status of the women and children participating in the intervention. Increased demand for diversified diets is an effort to promote improved nutrition status of especially vulnerable groups in communities. The indicators used in this study are mostly proxies of the ability of the diets to meet macro and micro nutrient needs but do not show conclusively the benefits on nutritional status. The findings would have been more conclusive if they showed impacts on either anthropometric measurements or micronutrient status of participants or both. This is in line with the finding from other researchers that the majority of agriculture interventions did not track these impacts, resulting in low evidence on the nutritive benefits of agriculture interventions.<sup>194</sup> However, it is worth noting that the indicators used here – MDD-W, MDD for children 6 to 23 months and the HFCS and HDDS are validated methodologies which are sensitive enough to estimating nutrient adequacy of diets.<sup>195</sup>

Another limitation of this study was the biasness towards assessing crop production rather than small livestock production, which was combersome since the consumption of animal source foods is generally low in Zimbabwe, particularly in the diets of children, and needs to be promoted.<sup>14</sup> It appears also that the LFSP-INSPIRE ENIPPA methodology was biased towards promoting crop production through micro gardens rather than small livestock production. None of the ten promoted behaviours focused on increasing small livestock production for improved consumption.

This study relied on secondary data to assess the status of the study participants prior to the LFSP-INSPIRE intervention in the Makoni district. This data came from the LFSP-INSPIRE intervention baseline, conducted by the intervention two years prior to this study. This study used a different sampling methodology and in some cases used different indicators to assess parameters such as household food security from those that were used in the primary data collection for the study. While great care was taken in interpreting and comparing these findings, they may have, to some extent compromised the validity of the study.

## Chapter 7: Conclusion and recommendations

### 7.1 Introduction

The study to evaluate the effectiveness of nutrition behaviour change interventions implemented by the LFSP in increasing the demand for diverse and nutritious foods was expected to generate critical evidence that will contribute to the global wealth of knowledge and understanding of how agriculture can benefit nutrition. It was also expected to contribute towards improved designing of agriculture interventions in Zimbabwe and globally to ensure increased impacts on nutrition. Its conceptualisation and design were informed by other researchers' recommendations on the need to further understand how to stimulate the demand for nutritious foods in rural communities, taking into account the effects of culture, markets and food access to this demand. In following with this, the researchers designed an observational, cross-sectional study which used a mixed methods approach to gather evidence related to how the LFSP-INSPIRE intervention in the Makoni district of the Manicaland province in Zimbabwe implemented various activities centred on promoting behaviours for increasing demand for a wide range of nutritious foods. Data was collected on household socio-demographics, food access and food consumption patterns, knowledge and perceptions about healthy eating, benefits of the intervention and sustainability of intervention gains. Demand for varied foods was assessed through the number and type of different foods produced and or purchased for consumption by households, women or children. Dietary diversity was assessed through validated dietary diversity indicators – the HDDS, HFCS, MDD for children aged 6 to 23 months and MDD-W for women for child bearing age. Data concerning that of markets play in providing nutritious foods to the intervention participants was also gathered and analysed. The findings were discussed in Chapter 6 against the study central question and what has been documented in literature.

This chapter will conclude the study, answering the study central question: Can nutrition BCC be delivered effectively through an agriculture intervention to influence food consumption related behaviours and increase demand for diverse and nutritious foods? It will also answer the three sub-questions:

1. How did the intervention stimulate an increase in the demand for diverse and nutritious foods?
2. How effective were the interventions in stimulating a demand for varied, nutritious foods?
3. What were the factors influencing the demand for varied and nutritious diets?

Recommendations to help strengthen the contribution of agriculture to nutrition through effective nutrition behaviour change interventions mainstreamed in agriculture activities as informed by the findings will be suggested, as well as those to inform future similar research. In closing, the researcher's views on how the findings will contribute and be of significance in the area of maximising the contributions of agriculture as a sector to nutrition will be provided.

## 7.2 Study conclusions

From the findings of the evaluation of the LFSP-INSPIRE intervention, detailed and discussed in Chapters 4, 5 and 6 respectively, it is clear that nutrition behaviour change can be effectively delivered in a nutrition sensitive agriculture intervention, to influence the demand and consumption of diverse nutritious foods. Comparison of the food production and food consumption patterns of the study participants before and after the intervention shows that people sought more varied and nutritious foods after the intervention; similarly, their food consumption patterns reflected more diversified consumption than reported at baseline. Food demand in this evaluation was defined as the willingness to buy or acquire food by any other means such as local production. The study indicated that the main source of food for the participants was local production, while the local formal markets provided very little of the foods consumed by households, except for those foods that cannot be easily produced by households such as cooking oil and sugar. As such, diversified agriculture production patterns in this study can be taken as reflective of the food demand, which in this case changed significantly as a result of the intervention. This is indicated by the study findings from the in-depth interviews and focus group discussions with participants.

The intervention stimulated an increase in demand for diverse nutritious foods, primarily through the structured and systematic ENIPPA methodology, support for production of a wide range of vegetables in small back-yard gardens called micro-gardens, and the incorporation of other key complementary messages concerning hygiene promotion and child care. The ENIPPA BCC methodology is based on two behaviour change theories – the Health belief model, and the Theory of reasoned thinking. It was anchored on a clear understanding of the nutritional problems in the Makoni district to be addressed by the intervention, clearly defined ten key behaviours to promote and conducted a barrier analysis to identify the barriers to practising these behaviours within the communities. This helped in designing clear and simple activities to target a change in these behaviours. Activities included regular group meetings, song, drama, peer-to-peer support, demonstrations and introducing completion of, and some form of graduation for people successfully completing the process. Being integrated in an agriculture intervention, the ENIPPA was designed in such a way that it was not too intensive and allowed participants to also engage in household chores and food production activities. All these aspects were fundamental to the success of the methodology.

Another success factor of the ENIPPA methodology was the provision of support to increase production for a wide range of crops using simple, climate smart and less labour-intensive production methods; such as key-hole gardens. This increased access to food and coupled it with increased knowledge on the need to diversify diets for improved health and nutrition status, and contributed to an increase in diversified consumption patterns. Unfortunately, the ENIPPA focused mainly on diversified crop production and very little support was given to small livestock production, necessary to improve access to animal source foods. In addition, the

study was biased towards assessing diversified crop production rather than small livestock production, which was a limitation. However, the study identified that participants purchased a lot of their animal source foods and the assessment of the market did not show formal markets as a source of such foods. It appeared therefore that the other LFSP-INPSIRE intervention activities involving supporting some specific value chains specifically for the market, e.g. intensive egg production, chicken and goat production also provided foods for the intervention participants through the local informal markets. This is a true indicator of increased demand for nutritious foods by LFSP-INPSIRE intervention participants in Makoni. In addition, bio-fortified crops were introduced for the first time in Makoni through the LFSP-INPSIRE and were widely accepted by participants. Nutrition behaviour change was central to ensuring these relations because previous studies have shown that increased agriculture production without nutrition education does not necessarily result in increased consumption.

However, a few shortcomings of the ENIPPA were identified. Key informants reported low coverage of the intervention within the districts, which would have a negative bearing on the impacts at district level. Intervention staff was few, therefore unable to fully support all participants effectively; this had a bearing on the success of the intervention. The vegetable seeds provided by the farmers to support the establishment of micro-gardens were few and could not reach all participants. This caused disgruntlement among those who did not receive and hence affected their morale. These issues could have had a bearing on the sustainability of the intervention's gains and could have been avoided through proper planning by the interventions.

The factors influencing the demand for varied and nutritious foods were many, the major one being income. Participants and key informants alike indicated that income is necessary to support the production of varied foods and to buy other foods that could not be produced, but were needed as part of diversified diets. Being a livelihood intervention, the LFSP aimed to increase participants' incomes through viable agriculture value chains. In this vein, it was expected that LFSP participants would report increased incomes from the intervention, but this did not appear to be the case, possibly indicating a shortcoming of the intervention in this respect. Participants also reported food preferences, and household food availability and access as other key factors affecting their food consumption patterns. Culture did not seem to influence demand and consumption of nutritious foods, instead ENIPPA helped to demystify myths and promote healthy dietary patterns. Local formal markets did not influence food consumption. In fact, their stocks were influenced by what was demanded by their customers. In this respect there is scope that with some form of marketing and promotion, they can influence the demand for nutritious foods locally.

From the findings of this study, it is apparent that nutrition behaviour change can be mainstreamed in agriculture interventions effectively to influence food consumption related behaviours and increase the

demand for varied nutrition foods. How sustainable these changes are could not be established by this study, but it is important to understand. In line with what is already known, nutrition BCC has been demonstrated to be an essential catalyst for translating increased agriculture production to improved consumption. It is also essential in ensuring agriculture research work benefits communities, as demonstrated by the results from bio-fortification promotion. Nutrition BCC should therefore be made a key component of nutrition sensitive agriculture interventions. However, it should be context specific and informed by BCC theoretical frameworks.

## **7.3 Recommendations**

The experiences and findings from this study identified several recommendations to the LFSP intervention team, the Makoni communities benefiting from the LFSP-INSPIRE intervention, and other researchers as outlined below.

### **7.3.1 Recommendations to the LFSP intervention team**

- While the nutrition BCC component of the intervention appeared to be working, there is a need to review other components, so as to provide holistic support to intervention participants such as ensuring the agriculture value chain's component provided the much needed income necessary to sustain the BCC gains.
- It is important to ensure the intervention has enough resources to support complete functioning of all the intervention activities and ensure equitable distribution of intervention materials such as garden seeds.
- Consider increasing intervention coverage if the intervention is going to be extended beyond the current end date. Greater coverage will have more meaningful impacts on reducing national nutrition indicators, such as child stunting.
- Behaviour change takes time if it is to be sustained. Similar interventions should be planned over a longer period of time with necessary support structures to work with communities.
- The ENIPPA methodology should, in addition to supporting diversified crop production through gardens, also support small livestock production to increase access to animal source foods. Early maturing and rapidly multiplying livestock such as chicken, rabbits and quail should be considered.
- The ENIPPA should consider adding other behaviours addressing issues of overweight and obesity through discouraging the consumption of high calorie, less nutritious snacks that were identified in the diet of children in this study.
- The market development component should consider working with local formal markets in Makoni to provide nutritious, affordable food options that can be easily marketed and promoted in



communities. These products can be in the form of cereal and legume blends that support child feeding.

### **7.3.2 Recommendations to the LFSP intervention community in Makoni**

- Ensure the gains from the ENIPPA are sustained through concerted efforts to practise the new behaviours learned through the LFSP-INSPIRE.
- Endeavour to work hard and provide for yourselves and refuse to be donor dependent. Garden seeds cost very little to buy but when grown and routinely consumed they can have immense impacts on family nutrition.
- Culture is essential but may be detrimental to health and the growth and development of children. It is important to seek knowledge on all myths and ensure these do not jeopardise the health and nutrition status of families.

### **7.3.3 Recommendations for future research**

- Mixed method approaches for scientific research should be used more extensively to provide a holistic understanding of phenomena, particularly when evaluating interventions. These methodologies and techniques should be refined to make them more sensitive. Mixed methods approach helps in identifying quantitative aspects, as well as gaining insight into why things are the way they are.
- Future similar studies should advance and measure the impacts of diets and food demand on nutritional status, including both anthropometry and micronutrient status. This will provide insight into the quantitative, conclusive impacts of agriculture on nutrition which will go a long way towards refining the contribution of agriculture as a sector to nutrition.
- There is need to measure the efficacy of crop bio-fortification in preventing, reversing or improving micronutrient status in the context of Zimbabwe. Bio-fortified crops - vitamin A orange maize and high iron and zinc beans were first introduced to the Makoni district through the LFSP. Farmers were very excited about the varieties and are taking them up for production and consumption. While there is evidence from other countries on their effectiveness in addressing micronutrient malnutrition, this has not been evaluated in Zimbabwean settings.

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## ADDENDA

### Addendum 1: Desk Review Checklist

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#### Desk Review Checklist

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##### **Introduction**

In order to fully understand the intervention, the beneficiaries, intervention objectives, activities, outputs and expected outcomes and results, this desk review will be conducted by the researcher at the beginning of the research. A formal request of these materials will be made by the researcher to the INSPIRE intervention Team Leader. The materials to be reviewed will include:

- Final full intervention proposal submitted to the donor(s)
- The intervention's nutrition strategy paper
- Intervention inception report
- Baseline survey report
- Quarterly and annual reports
- Reports of any other studies conducted during the course of the intervention
- 2015 Rural Vulnerability Assessment Survey Report
- 2014 National Multiple Indicator Cluster Survey Report

##### **Checklist guide for the desk review**

Information to be obtained from the reviewed documents:

- |   |                          |                          |
|---|--------------------------|--------------------------|
| + Description of the study population;                                  | <input type="checkbox"/> |                          |
| ○ Socio-demographic parameters  | <input type="checkbox"/> |                          |
| ○ Food consumption patterns   |                          | <input type="checkbox"/> |
| + Problem(s) to be addressed by the intervention                        | <input type="checkbox"/> |                          |
| + Behaviour change methodologies used and how they were implemented     |                          | <input type="checkbox"/> |
| + Activities undertaken to promote behaviour change                     | <input type="checkbox"/> |                          |
| + Progress with delivering behaviour change and experiences to date     | <input type="checkbox"/> |                          |
| + National, and local nutrition context and the drivers of malnutrition | <input type="checkbox"/> |                          |
| + Agriculture production patterns and food sources                      | <input type="checkbox"/> |                          |
| + Baseline nutrition knowledge and practises                            | <input type="checkbox"/> |                          |

## Addendum 2: Interviewer Administered Key Informant Interview Questionnaire

### Key Informant Interview Guide

For intervention personnel and Government Extension Officers

#### Introduction

Hello my name is Delilah Takawira. I am a Master of Nutrition Student at Stellenbosch University. As part of my studies I am undertaking a research to evaluate the effectiveness of the nutrition behaviour change interventions employed by the LFSP in promoting demand for safe, diverse and nutritious foods. You have been randomly selected to participate in the study as a key informant. I would like to ask you a few questions pertaining to your role as a intervention personnel / government counterpart in the intervention. This will take about 30 minutes of your time. The information from this discussion will be treated with strict confidentiality and will be used only for the purposes of the study together with information from other informants. Your name will not be used in any way in reference to the study findings. Would like to participate in this study? **YES** ☐ **NO** ☐

1.Name: \_\_\_\_\_

2.Sex: M F

3. Position in the intervention: \_\_\_\_\_

4. No of Years in Position:

- 1. <1 year
- 2. 1 - 2 years
- 3. > 3 years

5. Highest level of education qualification attained:

- 1. Primary
- 2. Secondary I
- 3. Tertiary
- 4. Post-graduate degree / diploma

6. What behaviour change methodologies were employed by the intervention?

7. How many people have you reached with nutrition BCC?

8. What activities were carried out by the intervention to promote nutrition behaviour change?



9. Who was targeted by the behaviour change activities?

9. How successful has been the intervention in promoting healthy eating and consumption of safe foods?

10. How have women and children's consumption patterns changed as a result of the intervention?

11. How does culture affect food consumption in this area?

12. How successful has been the intervention in promoting healthy eating?

13. What challenges has the intervention faced in promoting healthy eating and how / what has been done to address them?

14 what have you learned about nutrition behaviour change from this intervention?

## Addendum 3: Individual Consent Form (English)

### PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

**TITLE OF THE RESEARCH INTERVENTION:** Evaluating the effectiveness of nutrition BCC interventions among smallholder farmers in Makoni rural district of Manicaland province in Zimbabwe

**REFERENCE NUMBER:**

**PRINCIPAL INVESTIGATOR:** Delilah Takawira

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**CONTACT NUMBER:** +27 21 938 9135 / +263772729817

You are being invited to take part in a research intervention. Please take some time to read the information presented here, which will explain the details of this intervention. Please ask the study staff any questions about any part of this intervention that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practise and the Medical Research Council (MRC) Ethical Guidelines for Research.

#### What is this research study all about?

This study is being conducted in Makoni district only, focusing on the 30 wards being covered by the Livelihoods and Food Security Intervention (LFSP). It aims to evaluate the effectiveness of nutrition BCC by the LFSP being implemented by Goal Zimbabwe in this area, in increasing demand for safe, diverse and nutritious foods by households, particularly women of child bearing age and children in the district and the influence of social, cultural and market factors on this demand. To do this, the study will review interventions' reports to determine baseline information about the study population and intervention activities and processes; assess the current status of the sampled women and men's knowledge, attitude and behaviours towards nutrition and healthy eating; assess the local markets supply of safe, diverse and nutritious foods the factors influencing this supply and make inferences on the intervention's effectiveness in stimulating demand for safe, diverse and nutritious foods and suggest recommendations for improving the intervention to increase impacts and design of future similar interventions.

### **Why have you been invited to participate?**

You have been randomly selected to participate in the study as a farmer participating in Livelihood and Food Security Intervention (LFSP). Every other participant had an equal chance to be selected. The reason for selecting a few participants is because we are not able to interview every participant due to time and resource constraints. Your views will give us a general picture of the intervention's benefits amongst the beneficiaries in this district. Your honest opinion is therefore being sought

### **What will your responsibilities be?**

Your key responsibility in this study is to answer all the questions we will ask you to the best of your knowledge and understanding, taking into consideration your social and cultural beliefs as well as your general practises. We kindly request your honest opinions in all the questions. Some questions may require you to recall things that happened yesterday or a few weeks or months ago. Please try your best to recall and answer these questions. However if you do not remember please indicate that to us.

With your permission, we would like to record the interview. The recording will be typed up and the information will be used to write a report on the findings of the research. Researchers from Stellenbosch University will work with the data. Your name will not appear on any record. A number will be given to your interview and that number will be used to report the information throughout the report. The information will be handled confidentially and recordings will be destroyed at the end of the research.

### **Will you benefit from taking part in this research?**

There will be no particular benefits or payment associated with participating in this exercise. However findings of this study have great potential in influencing the LFSP to ensure you get better service that will impact greatly on improving the nutrition and well-being of your children and families at large. It will also influence the designing and implementation of more sensitive interventions that benefit communities like yours.

### **Are there in risks involved in your taking part in this research?**

We do not anticipate any risks as a result of your participation in this study.

### **Who will have access to your information?**

The information from this discussion will be treated with strict confidentiality and will be used only for the purposes of the study together with information from other informants. The information you give us will primarily be handled by me and my assistant and will be put together with information from other participants. Your name will not be used in any way in reference to the study findings.

### **What will happen in the unlikely event of some form injury occurring as a direct result of your taking part in this research study?**

No injury is anticipated from your direct participation in the study.

### **Will you be paid to take part in this study and are there any costs involved?**

No, you will not be paid to take part in the study and there will be no costs involved for you, if you do take part.

### **Is there any thing else that you should know or do?**

- You can contact the Health Research Ethics Committee at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by the investigators.
- You will receive a copy of this information and consent form for your own records.

## Declaration by participant

By signing below, I ..... agree to take part in a research study entitled (*Evaluating the effectiveness of nutrition BCC interventions among smallholder farmers in Makoni rural district of Manicaland province in Zimbabwe* ).

I declare that:

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.
- I fully understand and consent to the use of a recorder during interviews. The sole purpose is to accurately capture all responses which will later be typed and the formation analysed together with information from other interviews.

Signed at (*place*) ..... on (*date*) ..... 2017.

.....  
Signature of participant

.....  
Signature of witness

## Declaration by investigator

I (*name*) ..... declare that:

- I explained the information in this document to .....
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter. (*If an interpreter is used then the interpreter must sign the declaration below.*)

Signed at (*place*) ..... on (*date*) ..... 2017.

.....  
Signature of investigator

.....  
Signature of witness

## Declaration by interpreter

---

I (*name*) ..... declare that:

- I assisted the investigator (*name*) ..... to explain the information in this document to (*name of participant*) ..... using the language medium of Shona.
- We encouraged him/her to ask questions and took adequate time to answer them.
- I conveyed a factually correct version of what was related to me.
- I am satisfied that the participant fully understands the content of this informed consent document and has had all his/her question satisfactorily answered.

Signed at (*place*) ..... on (*date*) .....

.....  
**Signature of interpreter**

.....  
**Signature of witness**

## Addendum 4: Individual Consent Form (Shona)

### GWARO REMASHOKO EKUZIVISA PAMUSORO PETSVAKURUDZO NEKUPIWA KWEMVUMO YEKUPINDA MUTSVAKURUDZO

**MUSORO WETSVAKURUDZO:** Ongororo yekubudirira kwechirongwa chekukurudzira kushandura maitiro evanhu pamusoro peudyo hwevarimi vemumaruwa ekuMakoni District muManicaland Province muZimbabwe.

**BHUKU NHAMBA:**

**MUKURU WETSVAKURUDZO:** Delilah Takawira

**KERO:** 6855 Mutemwa Hills ZIMRE Park Ruwa Harare, ZIMBABWE /  
Stellenbosch University  
Faculty of Medicine and Health Sciences  
Division of Human Nutrition  
Clinical Building, Francie van Zijl Drive  
Tygerberg 7505, Cape Town, South Africa  
Box 241, Cape Town 8000

**NHAMBA DZEFONI:** +27 21 938 9135 / +263772729817

Muri kukokwa kupinda mutsvakurudzo ine zita rapihwa pamusoro. Tinokumbira muverenge gwaro rino zvakanaka munzwisise nezvetsvakurudzo iyi. Ndapota bvunzai mibvunzo kuvakuru vetsvakurudzo pane zvamunenge musinganzwisise pamusoro petsvakurudzo ino. Zvakakosha kuti munyatsogutsikana nekunyatsonzwisise kuti tsvakurudzo iyi iri kunyatsoita nezve uye kuti mungapindawo sei muchirongwa chacho. Kupinda kwenyu mutsvakurudzo kuri kwamuri, makasununguka kusarudza kupinda kana kusapinda pasina kumanikidzwa. Hapana chakaipa chingakuwanei kana kurasikirwa kwamungaita kana mukasarudza kusapinda mutsvakurudzo. Kana masarudza kupinda mutsvakurudzo, makasununguka zvakare kubuda chero nguva kana maona kuti hamuchade kuramba muri mairi.

Tsvakurudzo iyi yakatenderwa kuti iitwe nevanoona nezvetsika dzemaitirwo akanaka etsvakurudzo, ve **Health Research Ethics Committee** paYunivhesiti ye Stellenbosch kuSouth Africa, kunova kunodzidza muongorori mukuru wetsvakurudzo ino. Tsvakurudzo ino iri kuitwawo zvakare maererano nemitemo yemaitirwo akanaka etsvakurudzo pasi rose *eDeclaration of Helsinki*, nemagwaro ekutevedzerwa kwetsvakurudzo muSouth Africa *eGuidelines for Good Clinical Practise* neve *Medical Research Council (MRC) Ethical Guidelines for Research*.

#### Tsvakurudzo iyi iri pamusoro pezve?

Tsvakurudzo ino iri kuitwa maMakoni chete, mumawadhi makumi matatu agere varimi vari muchirongwa che *Livelihoods and Food Security Intervention (LFSP)*. Tsvakurudzo iyi yakanangana nekuongorora kubudirira kwechirongwa cheLFSP mukukurudzira kushandurwa kwemaitiro ari pamusoro peudyo hwakanaka mudzimba dzevarimi vari muchirongwa ichi, icho chiri kutungamirirwa neGoal Zimbabwe munzvimbo ino. Izvi zviri kuitirwa kukurudzira vanhu kuti vasarudze zvekafu zvakanaka zvemhando dzakasiyana-siyana zvinovaka muviri zvizere kunyanya kumadzimai achiri kubereka uye vana vadiki. Tsvakurudzo ichaongororawo zvakare kuti tsika nemagariro evanhu muno nezvinhu zvinoenderana nekutengeswa kwechikafu mumisika nemuzvitoro maMakoni zviri kubatsiridzawo kana kunganisawo sei sarudzo idzi. Muongororo iyi, tsvakurudzo ino ichaita zvinotevera: kuongorora magwaro echirongwa chese kuti tione maitiro amaita chirongwa chisati chatanga nekonawo mabasa aitwa nechirongwa pamwe chete nemi mukukurudzira udyo hwakanaka kuvarimi. Ichasarudzawo zvakare vanhu vashoma, varume nevakadzi vachataura vakamirira chirongwa chese maererano neruzivo rwavo munezveudyo, maitiro avo mudzimba

uye maonero avo nyaya dzeudyo idzi nebatsiro yavawana kubva kuchirongwa cheLFSP mukushandura ruzivo nemaitiro avo. Tsvakurudzo ichaongororawo zvakare kuwanikwa kwezvikafu zvakasiyana-siyana zvinodiwa kuvaka muviri mumisika nezvitoro zvakakomberedza. Mukupedzisira, tsvakurudzo ino icharatidza kuti chirongwa cheLFSP chaburira zvakaadini mukukurudzira udyo hwakanaka kuburikidza nekukurudzira varimi kuti vasarudze kudya kwakanaka kwakakasiyana-siyana. Ichapawo zvakare kurudziro dzinobatsira kuti chirongwa ichi chibudirire uye kuti zvimwe zvirongwa zvakanaka naichocho zvicharongwa zvigonyatsobudirira mukushandura hupenyu hwevarimi vemumaruwa sevari mudunhu rino.

### **Sei masarudzwa kuti mupinde mutsvakurudzo?**

Zita renyu ranhongwa pakati pemazita evarimi vose vari muchirongwa cheLFSP. Munhu wese ari muchirongwa ichi anga aine mukana wakafana wekukwanisa kusarudzwa. Tinosarudza vanhu vashoma kuti vamirire varimi vese vari muchirongwa nemhaka yekuti hatikwanise kutaura nevarimi vose nekuti zvinotora nguva nemari yakawanda zvikuru zvinova zvatisina. Mhinduro dzenyu, nemaonero enyu achatipa mufananidzo mukuru unomirira vanhu vose vari muchirongwa cheLFSP munzvimbo ino. Nekudaro, tinokumbirisa zvikuru kuti muve makatendeka pakupindura mibvunzo yese yamuchabvunzwa nekutipawo maonero enyu azere.

### **Mabasa enyu mutsvakurudzo ino achange akamira sei?**

Basa renyu guru mutsvakurudzo ino nderekupindura zvizere uye zvakanaka mibvunzo yose yamuchabvunzwa. Izvi zvingangokutorerai maminitsi anosvita makumi mana nemashanu kana awa imwechete. Mhinduro dzenyu dzinofanira kuratidza ruzivo rwenyu, nemanzwisisiro enyu uye tsika nemagariro enyu pamwe nemaitiro enyu mazuva ese. Tinokumbirisa zvikuru kuti mutipe maonero enyu akatendeka, kwete kutiudza zvamunofunga kuti tiri kuda kunzwa. Mimwe mibvunzo ichakukumbirai kuti murangarire zvaitika mumazuva, masvondo kana mwedzi yakapfuura. Nekudaro tinokukumbirai kuti muedze nepamunogona kurangarire zvaitika kumashure ikoko. Zvisinei, kana musisarangarire, tapota titaurirei chokwadi kuti makanganwa.

Kana muchizvitendera, tinokumbirawo kushandisa kamuchina kano kurekodha nhaurirano yedu nemi. Zvaticharekodha izvi zvichatibatsira mukunyora mhinduro dzenyu nemaonero enyu zvizere kana tonyora zvichabuda mutsvakurudzo. Vaongorori vetsvakurudzo iyi kuYunivhesiti yeStellenbosch vachashanda nemhinduro idzi mukunyora magwaro pamusoro petsvakurudzo ino. Zita renyu harizoshandiswa mukunyorwa kana kutaurwa kwezvichabuda mutsvakurudzo ino. Munhu wega wega achapinda mutsvakurudzo achapihwa nhamba ichashandiswa mukuongorora nemukunyorwa kwezvichabuda mutsvakurudzo ino. Zvamuchatiudza muhurukuro ino zvichachengetwa zvakananzika uye zvati kurekodha zvichadzimwa kana tangopedza ongororo yetsvakurudzo ino.

### **Muchava nezvamuchawana here kubva mukupinda mutsvakurudzo ino?**

Hapana mugove kana mubairo wamuchawana nekuda kwekupinda mutsvakurudzo ino. Zvisinei, zvichabuda mutsvakurudzo ino zvichabatsira zvikuru mukubatsiridza kuti chirongwa cheLFSP chikubatsirei zvakanaka kuti udyo hwenyu nemhuri dzenyu, kunyanya vana hunge hwakanaka. Zvichabuda zvichabatsirawo zvakare mukurongwa kwezvimwe zvirongwa zvichauya zvinobatsira varimi secheLFSP kuti zvinyatsobatsira kushandura udyo hwemhuri zvinoita kuti vanhu vave nehutano hwakanaka, vana vakure zvakanaka, uye kuti dunhu nenyika zvibudirire.

### **Pane njodzi here dzamungatarisire kuburikidza nekupinda kwenyu mutsvakurudzo ino?**

Hatitarisire zvachose kuti pave nenjodzi yeripi rudzi ingakuwirei kuburikidza nekupinda kwenyu mutsvakurudzo ino.

### **Ndiani achawona mashoko neruzivo rwamuchatipa?**

Mashoko ese amuchatiudza mutsvakurudzo ino achachengetedzwa zvakananzika uye achasanganiswa neachabva kune vanhu vose vachakurukurwa navo mutsvakurudzo ino, ozoshandiswa bedzi muongororo nemukunyorwa kwemagwaro etsvakurudzo. Mashoko amuchatipa mutsvakurudzo ino achashandiswa neni,

mukuru wetsvakurudzo, pamwe nemubatsiri wangu uye achasanganiswa neachabva kune dzimwe hurukuro. Zita renyu harichazoshandiswa zvachose munhaurwa kana zvinyorwa zvetsvakurudzo ino.

### **Chii chinotika kana zvikaitika kuti makuvara nekuda kwekupinda mutsvakurudzo ino?**

Hatitarisire zvachose kuti mukuvare nekuda wekupinda mutsvakurudzo ino.

### **Pane mubhadaro here wekupinda kwenyu mutsvakurudzo ino uye pane mari dزامungatarisirwa kuti mubvise here?**

Kwete, hakuna mubadharo ba wamuchapihwa nekuda kwekuti mapinda mutsvakurudzo ino. Hapanawo zvekare chamunotarisirwa kubadhara kuti munge muri mutsvakurudzo.

### **Pane zvimwe here zvamunofanira kuziva kana kuita?**

- Munogona kufonera ve*Health Research Ethics Committee* kuYunivhesiti yeStellenbosch panhamba dzinoti 0026721938 9207 kana muine zviri kukunetsai kana zvinyunyuto zvisina kugadziriswa nevakuru vetsvakurudzo ino.
- Muchapihwawo mufananidzo wegwaro rino kuti muchengete sezvinyorwa zvenyu.

### **Chitsidzo cheMutaari**

Nekusaina gwaro rino, ini..... ndinobvuma kupinda mutsvakurudzo ye*Ongororo yekubudirira kwechirongwa chekukurudzira kushandura maitiro evanhu pamusoro peudyo mudzimba dzevarimi vemumarwa ekuMakoni District muManicaland Province muZimbabwe*

Ndinotsidza kuti:

- Ndaverenga / ndaverengerwa mashoko ose ari mugwaro rino nebepa rekupa mvumo yangu yekupinda mutsvakurudzo izvo zvakanyorwa nemutauro wandinonzwisisa uye wandinonyatsokwanisa kutaura
- Ndakave nemukana wekubvunza mibvunzo uye mibvunzo yangu yose yakanyatsopindurwa zvakanakwana
- Ndinonzwisisa kuti kupinda kwangu mutsvakurudzo ino kuri **pamadiro angu** uye handina kumanikidzwa kuti ndipinde.
- Ndinogona kubuda mutsvakurudzo pane chero nguva yandingada pasina chakaipa chingaitwa kwandiri, kusarira kwandingaite kana kuripiswa kweipi mhando nekuda kwekuita izvi.
- Ndinogona kukumbirwa kuti ndibude mutsvakurudzo iyi isati yapera, kana vakuru vetsvakurudzo vaona zvakanakira kuti ndibude, kana kuti ndatadza kutevedzera hurongwa hwetsvakurudzo sekubvumirana kwatinenge taita pakutanga.
- Ndinonyatsonzwisisa uye ndinopa mvumo yangu kuti hurukuro yedu irekodwe. Kurekodhewa kwehurukuro kuchabatsira bedzi kuti mhinduro dzangu dzinyatsobatwa zvakanaka pasina kushandurwa kana kukanganiswa pakunyorwa mumagwaro etsvakurudzo ino pamwechete nemhiduro dzevamwewo vachapinda mutsvakurudzo.



Ndasaina pano pa(nzvimbo).....musi wa(zuva) ..... gore ra 2016.

.....  
Siginicha yemutauri

.....  
Siginicha yeChapupu

### Chitsidzo chemukuru weTsvakurudzo

Ini(zita) ..... ndinotsidza kuti:

- Ndatsanagura mashoko ose ari mugwaro rino zvizere kuna .....
- Ndakurudzira kuti amai / baba ava vabvunze mibvunzo uye ndatora nguva yakakwana kupindura mibvunzo yavo yose.
- Ndagutsikana kuti amai / baba ava vanyatsonzwisisa zvose zviripo pamusoro petsvakurudzo sekukurukura kwataita
- Ndashandisa / handina kushandisa mupirikiri (*kana mupirikiri ashandiswa ngaasainewo pazasi apa*)

Ndasaina pano pa(nzvimbo) ..... Musi wa(zuva) ..... Gore ra 2016.

.....  
Siginicha yemukuru weTsvakurudzo

.....  
Siginicha yeChapupu

### Chitsidzo cheMupirikiri

Ini (zita) ..... ndinotsidza kuti:

- Ndabatsira mukuru weTsvakurudzo ino (zita)..... Kutsanangura zvizere mashoko ose ari mugwaro rino kuna (zita remutauri)..... ndichishandisa rurimi rwechiShona.
- Takurudzira amai / baba ava kubvunza mibvunzo tikatorawo nguva yakakwana kupindura mibvunzo yose.
- Ndatsanangura muzvokwadi zvose zvataurwa pano sekuzvipihwa kwandaitwa.
- Ndinogutsikana kuti mutauri anyatsonzwisisa zvose zviri mugwaro rino nerekuva mvumo yake uye mibvunzo yake yose yapindurwa zvakanwana .

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Ndasaina pano pa(*nzvimbo*) ..... musi wa(*zuva*) .....gore ra 2016

.....  
**Siginicha yeMukurikiri**

.....  
**Siginicha yeChapupu**

## Addendum 5: Men's In-depth Interview Questionnaire (English)

### In-depth Interview Guide

For men participating in Nutrition Behaviour Change Groups (ENNIPA Circles) or Farmer Field Schools

#### Introduction

*Hello my name is Delilah Takawira. I am a Master of Nutrition Student at Stellenbosch University. As part of my studies I am undertaking a research to evaluate the effectiveness of the nutrition behaviour change interventions employed by the LFSP in promoting demand for safe, diverse and nutritious foods. You have been randomly selected to participate in the study as a key informant. I would like to ask you a few questions pertaining to your role as a intervention personnel / government counterpart in the intervention. This will take about 30 - 60 minutes of your time. The information from this discussion will be treated with strict confidentiality and will be used only for the purposes of the study together with information from other informants. Your name will not be used in any way in reference to the study findings. Would you like to participate in this study?*      **YES**    ☐                      **NO**    ☐

#### Use of a recorder

*In order to ensure that we capture accurately what you say, without disturbing the flow of our discussion, I would like to seek your permission to use a recorder. This little machine will record our conversation and will enable me to quickly and appropriately capture your important views. This information will be transcribed and used for the purposes of the research study only. It will be treated with strict confidentiality and will not be shared with any other person except ourselves. Would you comfortable to let me us the recorder for this interview?*

**YES:**    ☐                      **NO:**    ☐

#### QUESTIONNAIRE IDENTIFICATION

<b>Respondent's Name</b>		<b>Ag-ecological zone</b>	
<b>Interviewer's Name</b>		<b>Questionnaire #</b>	
<b>Date of Interview</b> (DD/MM/YY)			

#### 1. HOUSEHOLD DEMOGRAPHICS (Circle appropriate code or write the appropriate number (#))

<b>1.1</b>	Sex of household head	1 = Male                      2 = Female	
<b>1.2</b>	Marital status of household head	1 = Married living together 2 = Married living apart 3 = Divorced/Separated 4 = Widow/widower 5 = Never married	
<b>1.3</b>	Age of household head		<b>1.4.</b> Number of people living in household? <input type="text"/>

<b>(Complete the table below by Gender and Age Group)</b>					
	<b>Write '0' if no household members in category</b>	<b>Number of members below 5 years</b>	<b>Number of members aged 5-17 years</b>	<b>Number of members aged 18 - 59</b>	<b>Number of members aged 60+</b>
<b>1.5</b>	Male				
<b>1.6</b>	Female				
<b>1.7</b>	Number of Orphans ( <i>one or both parents dead</i> )				
<b>1.8</b>	Number of members physically/mentally challenged				
<b>1.9</b>	Number of members Chronically ill ( <i>currently ill and has been ill for 3 or more months to the extent of being unable to work</i> )				
<b>1.10</b> In the last 12 months, did your household get any support (cash, food, other non-food essential services and goods) from any of the following: (Please circle appropriate codes)					
<b>Where Support Came from</b>				<b>Type of support</b>	
a. Government		1=Yes	2=No		
b. NGO		1=Yes	2=No		
c. Churches		1=Yes	2=No		
d. Within Zimbabwe Rural		1=Yes	2=No		
e. Within Zimbabwe Urban		1=Yes	2=No		
f. Outside Zimbabwe		1=Yes	2=No		
<b>1.11</b>	What is the main cereal currently consumed in this household?  ☼ [If sadza, probe to determine type of sadza]	Maize .....1 Millet.....2 Sorghum.....3 Rapoko.....4 Rice .....5 Bulgar wheat... .....6 Other.....8			
<b>1.12</b>	Do you currently have any of this cereal in the household?  → [If NO, SKIP to 2]	Yes..... 1 No .....2 Don't know.....8			
<b>1.13</b>	How long do you think the cereal you have in the household now will last?	Up to 2 weeks.....1 Up to 1 month.....2			

		1 to 3 months.....3 Enough to last until next harvest.....4 Don't Know.....8
--	--	--

**2. HOUSEHOLD FOOD PRODUCTION**

2.1	Do you have a garden?	Yes	1	
		No	2	→2.4
2.2	What crops in your garden are currently mature and ready for consumption?  <i>CIRCLE ALL THAT APPLY</i>	Green leafy vegetables	1	
		Spinach	2	
		Butternuts	3	
		Carrots	4	
		Green Beans	5	
		Onions	6	
		Tomatoes	7	
		None	8	
		Other (specify)	9	
2.3	Of the vegetables you mentioned above which ones did you consume in the past seven (7) days?  <i>CIRCLE ALL THAT APPLY</i>	Green leafy vegetables	1	
		Spinach	2	
		Butternuts	3	
		Carrots	4	
		Green Beans	5	
		Onions	6	
		Tomatoes	7	
		None	8	
		Other (specify)	9	
2.4	Do you have any fruit trees around your home area that you consume regularly?	Yes ..... 1		→go to 3
		No ..... 2		
2.5	Which fruit trees do you have?  <i>CIRCLE ALL THAT APPLY</i>	Mango	1	
		Orange/naartjie/lemon	2	
		Avocado	3	
		Guava	4	
		Muzhanje	5	
		Pawpaw	6	
		Peaches	7	
		Banana	8	
		Mulberry	9	
		Muhacha	10	
		Other (specify)	11	

**3. HOUSEHOLD MAIN INCOME SOURCES**

<b>3 - During the past 6 months, what were your household's most important sources of incomes? (use activity code, up to 4 activities)</b>		
<b>Livelihoods rank</b>		<b>Livelihoods source codes</b>
<b>1</b>	<b>Most important</b>	
<b>2</b>	<b>Second</b>	
<b>3</b>	<b>Third</b>	
<b>4</b>	<b>Fourth</b>	
<p><b>Livelihood source codes:</b></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>1 = remittance</p> <p>2 = food crop production/sales</p> <p>3 = cash crop production</p> <p>4 = casual labour</p> <p>5 = begging</p> <p>6 = livestock production/sales</p> <p>7 = skilled trade/artisan</p> </div> <div style="width: 30%;"> <p>8 = own business</p> <p>9 = petty trade</p> <p>10 = pension</p> <p>11 = formal salary/wages</p> <p>12 = fishing</p> <p>13 = gifts</p> <p>14 = vegetable production/sales</p> <p>15 = small scale mining/mineral sales</p> <p>16 = beer brewing</p> </div> <div style="width: 30%;"> <p>17 = food assistance</p> <p>18 = cross border trade</p> <p>19 = currency trade</p> <p>20 = gathering natural products for sale e.g. firewood</p> <p>21 = collecting scrap/ waste material for re-sale</p> <p>22 = rentals</p> <p>23 = Other</p> <p>24 = no other source</p> </div> </div>		

**4. HOUSEHOLD FOOD INSECURITY ACCESS SCALE (HFIAS)**

		How often did this happen?			
		Never	Rarely (once or twice in the past four weeks)	Sometimes (three to ten times in the past four weeks)	Often (more than ten times in the past four weeks)
<b>4</b>					
A	In the past four weeks, did you worry that your household would not have enough food to fill your stomachs?	0	1	2	3
B	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0	1	2	3

C	In the past four weeks, did you or any household member have to eat a limited variety of foods due to lack of resources?	0	1	2	3
D	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0	1	2	3
E	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0	1	2	3
F	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0	1	2	3
G	In the past four weeks, was there ever no food to eat of any kind in the household because of lack of resources to get food?	0	1	2	3

## 7. KNOWLEDGE ABOUT HEALTHY EATING

7.1 What is a balanced diet?

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7.2 Which food groups do you know?

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7.3 What happens if people do not eat a variety of foods / or an unbalanced diet?

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7.4 Which foods do you commonly eat?

Why? \_\_\_\_\_

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7.5 What did you learn about healthy eating through the ENNIPA Circles / Farmer Field School?

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## **8. FACTORS AFFECTING HOUSEHOLD FOOD CONSUMPTION**

8.1 What determines the foods you eat as a household?

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8.2 What determines what your children eat?

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8.3 How easy is it to practise what you know about healthy eating for feeding your family and your younger children?

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## **9. BARRIERS AND ENABLERS TO DIVERSIFIED FOOD CONSUMPTION**

9.1 What are the major challenges to optimum food consumption?

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9.2 How have you dealt with these challenges?

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**10 PERCEPTIONS ABOUT THE INTERVENTION**

10.1 How has your participation in the ENNIPA Circles influenced the way you and your family eat?

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10.2 What foods do you now eat more of than you used to before the intervention?

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10.3 How sustainable is this change in eating?

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## Addendum 6: Women's In-depth Interview Questionnaire (English)

### In-depth Interview Guide

#### For women participating in Nutrition Behaviour Change Groups (ENNIPA Circles)

#### Introduction

Hello my name is Delilah Takawira. I am a Master of Nutrition Student at Stellenbosch University. As part of my studies I am undertaking a research to evaluate the effectiveness of the nutrition behaviour change interventions employed by the LFSP in promoting demand for safe, diverse and nutritious foods. You have been randomly selected to participate in the study as a key informant. I would like to ask you a few questions pertaining to your role as a intervention personnel / government counterpart in the intervention. This will take about 30 - 60 minutes of your time. The information from this discussion will be treated with strict confidentiality and will be used only for the purposes of the study together with information from other informants. Your name will not be used in any way in reference to the study findings. Would you like to participate in this study? **YES** ☐ **NO** ☐

#### Use of a recorder

In order to ensure that we capture accurately what you say, without disturbing the flow of our discussion, I would like to seek your permission to use a recorder. This little machine will record our conversation and will enable me to quickly and appropriately capture your important views. This information will be transcribed and used for the purposes of the research study only. It will be treated with strict confidentiality and will not be shared with any other person except ourselves. Would you comfortable to let me us the recorder for this interview?

**YES:** ☐ **NO:** ☐

#### QUESTIONNAIRE IDENTIFICATION

<b>Respondent's Name</b>		<b>Ag-ecological zone</b>	
<b>Interviewer's Name</b>		<b>Questionnaire #</b>	
<b>Date of Interview</b> (DD/MM/YY)			

#### 1. HOUSEHOLD DEMOGRAPHICS (Circle appropriate code or write the appropriate number (#))

<b>1.1</b>	Sex of household head	1 = Male          2 = Female	
<b>1.2</b>	Marital status of household head	1 = Married living together 2 = Married living apart 3 = Divorced/Separated 4 = Widow/widower 5 = Never married	
<b>1.3</b>	Age of household head		<b>1.4.</b> Number of people living in household?
<b>( Complete the table below by Gender and Age Group)</b>			

	<b>Write '0' if no household members in category</b>	<b>Number of members below 5 years</b>	<b>Number of members aged 5-17 years</b>	<b>Number of members aged 18 - 59</b>	<b>Number of members aged 60+</b>
<b>1.5</b>	Male				
<b>1.6</b>	Female				
<b>1.7</b>	Number of Orphans ( <i>one or both parents dead</i> )				
<b>1.8</b>	Number of members physically/mentally challenged				
<b>1.9</b>	Number of members Chronically ill ( <i>currently ill and has been ill for 3 or more months to the extent of being unable to work</i> )				
<b>1.10</b> In the last 12 months, did your household get any support (cash, food, other non-food essential services and goods) from any of the following: (Please circle appropriate codes)					
<b>Where Support Came from</b>				<b>Type of support</b>	
g. Government		1=Yes	2=No		
h. NGO		1=Yes	2=No		
i. Churches		1=Yes	2=No		
j. Within Zimbabwe Rural		1=Yes	2=No		
k. Within Zimbabwe Urban		1=Yes	2=No		
l. Outside Zimbabwe		1=Yes	2=No		
<b>1.11</b>	What is the main cereal currently consumed in this household?  ☼ [If sadza, probe to determine type of sadza]	Maize .....1 Millet.....2 Sorghum.....3 Rapoko.....4 Rice .....5 Bulgar wheat... .....6 Other.....8			
<b>1.12</b>	Do you currently have any of this cereal in the household?  → [If NO, SKIP to 2]	Yes..... 1 No .....2 Don't know.....8			
<b>1.13</b>	How long do you think the cereal you have in the household now will last?	Up to 2 weeks.....1 Up to 1 month.....2 1 to 3 months.....3			

		Enough to last until next harvest.....4 Don't Know.....8
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**2. HOUSEHOLD FOOD PRODUCTION**

2.1	Do you have a garden?	Yes	1	→2.4
		No	2	
2.2	What crops in your garden are currently mature and ready for consumption?  <i>CIRCLE ALL THAT APPLY</i>	Green leafy vegetables	1	
		Spinach	2	
		Butternuts	3	
		Carrots	4	
		Green Beans	5	
		Onions	6	
		Tomatoes	7	
		None	8	
		Other (specify)	9	
2.3	Of the vegetables you mentioned above which ones did you consume in the past seven (7) days?  <i>CIRCLE ALL THAT APPLY</i>	Green leafy vegetables	1	
		Spinach	2	
		Butternuts	3	
		Carrots	4	
		Green Beans	5	
		Onions	6	
		Tomatoes	7	
		None	8	
		Other (specify)	9	
2.4	Do you have any fruit trees around your home area that you consume regularly?	Yes ..... 1	→go to 3	
		No ..... 2		
2.5	Which fruit trees do you have?  <i>CIRCLE ALL THAT APPLY</i>	Mango	1	
		Orange/naartjie/lemon	2	
		Avocado	3	
		Guava	4	
		Muzhanje	5	
		Pawpaw	6	
		Peaches	7	
		Banana	8	
		Mulberry	9	
		Muhacha	10	
		Other (specify)	11	

**3. HOUSEHOLD MAIN INCOME SOURCES**

**3** - During the past 6 months, what were your household's most important sources of incomes? (*use activity code, up to 4 activities*)

Livelihoods rank		Livelihoods source codes	
1	Most important		
2	Second		
3	Third		
4	Fourth		
<b>Livelihood source codes:</b> 1 = remittance 2 = food crop production/sales 3 = cash crop production 4 = casual labour 5 = begging 6 = livestock production/sales 7 = skilled trade/artisan		8 = own business 9 = petty trade 10 = pension 11 = formal salary/wages 12 = fishing 13 = gifts 14 = vegetable production/sales 15 = small scale mining/mineral sales 16 = beer brewing	17 = food assistance 18 = cross border trade 19 = currency trade 20 = gathering natural products for sale e.g. firewood 21 = collecting scrap/ waste material for re-sale 22 = rentals 23 = Other 24 = no other source

#### 4. HOUSEHOLD CONSUMPTION PATTERN AND DIETARY DIVERSITY

<b>4.1</b>	How many meals did the <b>members in your household aged 5yrs and above</b> eat <b>yesterday</b> ?	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <b>NUMBER OF MEALS</b>	
<b>4.1b</b>	Is this the number of meals these members eat in most of the days?	<b>1=Yes 2=No</b>	
<b>4.2</b>	How many meals did the children aged <b>6 – 59 months</b> in your household eat <b>yesterday</b> ? ( <i>If NO Children in the Household, Write 99 for N/A, if children were absent yesterday write 98</i> )	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <b>NUMBER OF MEALS</b>	
<b>4.2b</b>	Is this the number of meals these members eat in most of the days?	<b>1=Yes 2=No 99=N/A</b>	
<b>4.3</b> Over the last <b>seven days</b> , how <b>many days</b> did your household consume the following food items and <b>What</b> was the <b>main source</b> of each consumed food item? ( <i>Add 99 for Main Sources if food item was not consumed</i> )			
Food Items (use standard items)	Eaten yesterday (0=no 1=yes)	Number of days in the past 7 days (0 to 7)	Main source (see codes)
1. Maize, mealie-meal			
2. Other cereal ( <i>bread, rice, sorghum, millet, pasta/maheu etc</i> )			
3. Roots and Tubers ( <i>cassava, potatoes, sweet potatoes</i> )			
4. Sugar or sugar products (include sugarcane and syrups)			
5. Beans and peas			
6. groundnuts ( <i>include peanut butter</i> )			
7. Vegetables ( <i>including relish and leaves</i> )			

8. Exotic Fruits ( <i>guava, mangoes, bananas, oranges etc</i> )			
9. Meat ( <i>Beef, goat, or other red meat, game meat, pork/mice</i> )			
10. Poultry and eggs ( <i>chicken/ducks/birds</i> )			
11. Indigenous foods( <i>leaves, roots, fruits, etc</i> )			
12. Fish ( <i>fresh or dried include Kapenta</i> )			
13. Oils/fats/butter			
14. Milk/other dairy products			
15. Corn soya blend (CSB)			
16. Edible insects ( <i>macimbi, ishwa, mandere etc</i> )			
<b>Main Food Source Codes</b> 1 = Own production 2 = Local Purchases(cash and barter) 3= Household imports (cash and barter) 4 = Remittance from <b>Outside</b> Zimbabwe 5 = Remittances from <b>Within</b> Zimbabwe 6 = Government Food Assistance(Direct, cash or vouchers) 7= Grain loan scheme	8= Non State Agencies Food Assistance(Direct, cash or vouchers) 9= Gifts (from non-relative well wishers) 10 = Labour exchange 11 = Borrowed 12 = Hunting and gathering from wild 13 = Gleaning 14 = Other		

## 5. WOMEN'S DIETARY DIVERSITY SCORE

5.	<b>Now I would like to ask you about other liquids or foods you may have had yesterday during the day or at night. I am interested in whether you had the item, even if it was combined with other foods</b>  <b>READ EACH ITEM ALOUD AND RECORD RESPONSE BEFORE PROCEEDING TO NEXT ITEM</b>			
	<b>Food Item</b>	<b>Yes</b>	<b>No</b>	<b>DK</b>
1	Any commercially fortified cereals food?	1	2	8
2	Any sadza, bread, rice, noodles, or any foods made from grains?	1	2	8
3	Any pumpkin, carrots, squash, yams or sweet potatoes or other vegetables that are yellow or orange inside?	1	2	8
4	Any white potatoes, white yams, cassava, or any foods made from roots?	1	2	8
5	Any dark green leafy vegetables such as spinach, pumpkin or okra leaves?	1	2	8
6	Any ripe mangoes or paw paw?	1	2	8
7	Any other fruits and vegetables?	1	2	8
8	Any liver, kidney, heart, or other organ meats?	1	2	8
9	Any beef, pork, lamb, goat, rabbit, or any game meat?	1	2	8

10	Any chicken, duck or other birds (e.g. guinea fowl)?	1	2	8
11	Any eggs?	1	2	8
12	Any edible insects, or fresh or dried fish, or shellfish?	1	2	8
13	Any food made from cowpeas, beans, other peas, or lentils?	1	2	8
14	Any peanut butter or other food from nuts?	1	2	8
15	Any cheese, yogurt, or milk products?	1	2	8
16	Any foods made with other oil, fat, or butter?	1	2	8

## 6. COMPLEMENTARY FEEDING – FOR ALL CHILDREN AGED 6 – 23 MONTHS

6	<p><b>Now I would like to ask you about other liquids or foods that your child (include all children aged 6 – 23 months) may have had yesterday during the day or at night. I am interested in whether your CHILD had the item, even if it was combined with other foods</b></p> <p>☞[Read each item aloud and record response before proceeding to next item.]</p>									
	Item	Youngest Child			Second Youngest Child			Third Youngest Child		
		Y	N	DK	Y	N	DK	Y	N	DK
A	Commercially produced infant formula?	1	2	8	1	2	8	1	2	8
B	Any cereal-based porridge or gruel?	1	2	8	1	2	8	1	2	8
C	Any Celerac, Proneutro, or any commercially fortified baby food?	1	2	8	1	2	8	1	2	8
D	Any sadza, bread, rice, noodles, or any foods made from grains?	1	2	8	1	2	8	1	2	8
E	Any pumpkin, carrots, squash, yams or sweet potatoes or other vegetables that are yellow or orange inside?	1	2	8	1	2	8	1	2	8
F	Any white potatoes, white yams, cassava, or any foods made from roots?	1	2	8	1	2	8	1	2	8

G	Any dark green leafy vegetables such as spinach, pumpkin or okra leaves?	1 2 8	1 2 8	1 2 8
H	Any ripe mangoes or paw paw?	1 2 8	1 2 8	1 2 8
I	Any other fruits and vegetables?	1 2 8	1 2 8	1 2 8
J	Any liver, kidney, heart, or other organ meats?	1 2 8	1 2 8	1 2 8
K	Any beef, pork, lamb, goat, rabbit, or any game meat?	1 2 8	1 2 8	1 2 8
L	Any chicken, duck or other birds (e.g. guinea fowl)?	1 2 8	1 2 8	1 2 8
M	Any eggs?	1 2 8	1 2 8	1 2 8
N	Any fresh or dried fish or shellfish?	1 2 8	1 2 8	1 2 8
O	Any food made from cowpeas, beans, other peas, or lentils?	1 2 8	1 2 8	1 2 8
P	Any peanut butter or other food from nuts?	1 2 8	1 2 8	1 2 8
Q	Any cheese, yogurt, or milk products?	1 2 8	1 2 8	1 2 8
R	Any foods made with other oil, fat, or butter?	1 2 8	1 2 8	1 2 8
S	Any sugary foods such as pastries, cakes, chocolates, sweets, or candies?	1 2 8	1 2 8	1 2 8
T	Any other solid or semi-solid foods that we have not mentioned?	1 2 8	1 2 8	1 2 8



U	Plain water?	1 8	2	1 8	2	1 8	2
V	Milk other than breast milk, such as tinned, powdered, or fresh animal milk?	1 8	2	1 8	2	1 8	2
W	Any sugary drinks such as fizzy drinks?	1 8	2	1 8	2	1 8	2
X	Any mahewu?	1 8	2	1 8	2	1 8	2
Y	Any fruit juice?	1 8	2	1 8	2	1 8	2
Z	Tea or coffee?	1 8	2	1 8	2	1 8	2
ZZ	Any other liquids not yet mentioned?	1 8	2	1 8	2	1 8	2

## 7. HOUSEHOLD FOOD INSECURITY ACCESS SCALE (HFIAS)

		How often did this happen?			
		Never	Rarely(once or twice in the past four weeks)	Sometimes(three to ten times in the past four weeks)	Often (more than ten times in the past four weeks)
A	In the past four weeks, did you worry that your household would not have enough food to fill your stomachs?	0	1	2	3
B	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0	1	2	3
C	In the past four weeks, did you or any household member have to eat a limited variety of foods due to lack of resources?	0	1	2	3

D	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0	1	2	3
E	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0	1	2	3
F	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0	1	2	3
G	In the past four weeks, was there ever no food to eat of any kind in the household because of lack of resources to get food?	0	1	2	3

## 7. KNOWLEDGE ABOUT HEALTHY EATING

7.1 What is a balanced diet?

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7.2 Which food groups do you know?

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7.3 What happens if people do not eat a variety of foods / or an unbalanced diet? \_\_\_\_\_

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7.4 Which foods do you commonly eat?

Why? \_\_\_\_\_

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7.5 What did you learn about healthy eating through the ENNIPA Circles?

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## **8. FACTORS AFFECTING HOUSEHOLD FOOD CONSUMPTION**

8.1 What determines the foods you eat as a household?

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8.2 What determines what you feed your children?

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8.3 How easy is it to practise what you know about healthy eating for feeding your family or your children?

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## **9. BARRIERS AND ENABLERS TO DIVERSIFIED FOOD CONSUMPTION**

9.1 What are the major challenges to optimum food consumption?

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9.2 How have you dealt with these challenges?

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## **10 PERCEPTIONS ABOUT THE INTERVENTION**

10.1 How has your participation in the ENNIPA Circles influenced the way you and your family eat? \_\_\_\_\_

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10.2 What foods do you now eat more of than you used to before the intervention? \_\_\_\_\_

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10.3 How sustainable is this change in eating?

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## Addendum 7: Men's In-depth Interview Questionnaire (Shona)

Hurukuro Yakadzama neVarume vari muzvikwata zveENIPPA kana zvekurima

### Nhungamiro

Kwaziwai, zita rangu ndinonzi Delilah Takawira. Ndiri mudzidzi wechirongwa cheMaster of Nutrition paStellenbosch University. Ndiri kuitawo ongororo yekubudirira kwechirongwa cheLFSP mukukurudzira kushandura maitiro evanhu pamusoro peudyo hwevarimi munzvimbo ino. Imi masarudzwa pakati pevamwe varume vese vari muchirongwa cheENIPPA nezvimwe zvikwata zvevarimi muno mamaMakoni kuti munge muchipindura mibvunzo muongororo ino. Ndinoda kukubvunzaiwo mibvunzo mishomanana inoenderana nezvamadzidza nekubatsirika nazvo kuburikidza nekuva kwenyu muchirongwa cheENIPPA. Zvichabuda muongororo ino zvichabatsira bedzi mukunyora ongororo iyi uye zvichabatsirawo mukurongwa kwezvimwe zviringwa zvakafanana necheLFSP kuti zvinyatsobatsira varimi. Hurukuro yedu ingangotora awa imwechete. Mhinduro dzenyu nezvese zvamuchatiudza muhurukuro ino zvichachengetedzwa zvakananzika uye zvichashandiswa bedzi muongororo ino. Zita renyu harichazoshandiswa zvachose mutsanangudzo dzichanyorwa pamusoro pehurukuro ino. Tinokoshesa zvikuru maonero enyu, nekudaro tinokukurudzirai kuti mutaure makasununguka. Mungada here kupinda muongororo iyi?

HONGU ☐ KWETE ☐

### KUZIVIKANWA KWEKWESENEYA

Zera remupinduri		Ag-ecological zone	
Zita remubvunzi		Kweseneya #	
Wadhi		Bhuku rinogara mupinduri	
Zuva rehurukuro (DD/MM/YY)			

### 1. Mamiriro emba (Tenderedza minduro dzose kana kunyora # imoenderana nemhinduro)

1.1	Mukuru wemba murume kana mukadzi	1 = Murume	2 = Mukadzi
1.2	Mamiriro emukuru wemba	1 = Akaroora achigara nemurume/mukadzi wake 2 = Akaroora asingagare nemurume kana mukadzi wake 3 = Akarambana nemumwe wake 4 = Akafirwa 5 = Haana / haasati aroora	
1.3	Makore emukuru wemba		1.4. Vanhu vanogara mumba muno vangani?
(Zadzisa tafura iri pasi zvizere)			
	Nyora '0' kana pasina munhu mumba muno ari muchikwata ichi	Nhamba yevanhu vari pasi pemakore mashanu ekuberekwa	Nhamba yevanhu vari pakati pemakore 5-17 ekuberekwa Nhamba yevanhu vane makore 18-59 Nhamba yevanhu vane makore anopfuura 60

1.5	Varume				
1.6	Vakadzi				
1.7	Nherera (mubereki mumwechete kana vese)				
1.8	Vakaremara kana vanorwara nepfungwa				
1.9	Varwere kwenguva yakareba ( <i>ari kurwara parizvino kana anga achirwara kwemwedzi mitatu kana kupfuura zvekutadza kuita mabasa emazuva ese</i> )				
<b>1.10</b> Mumwedzi gumi nemiviri yapfuura, imba yenyu yakambowana here rubatsiro (rwemari, chikafu kana zvimwewo zvekushandisa pamba) kubva kune vanotevera: (tenderedza hongu pane sarudzo dzese mhinduro)					
<b>Kwakabva Rubatsiro</b>				<b>Rubatsiro rwacho</b>	
m.	Hurumende	1=Hongu	2=Kwete		
n.	NGO	1=Hongu	2=Kwete		
o.	Machechi	1=Hongu	2=Kwete		
p.	MuZimbabwe kumamisha	1=Hongu	2=Kwete		
q.	MuZimbabwe mudhorobha	1=Hongu	2=Kwete		
r.	Kunze kwenyika	1=Hongu	2=Kwete		
1.11	Sadza ramuri kudya mumba muno nderipi?	Chibage .....1 Mhunga .....2 Mapfunde.....3 Zviyo.....4 Raisi .....5 Gorosi yeBulgar... .....6 Zvimwewo.....8			
1.12	Mune chibage (kana imwe mbeu yesadza ravari kudya) here parizvino?  → [Kana mhinduro iri kwete charikai kuenda kunhamba 2]	Hongu..... 1 Kwete .....2 Handizive.....8			
1.13	Munofunga kuti chibage (kana imwe mbeu yesadza yavari kudya) chamunacho chichakusvitsai papi / chchapera rinhi?	Kwemasvondo maviri.....1 Kwemwedzi.....2 Pakati pemwedzi mumwe kusvika mitatu.....3 Kusvika patichakohwa.....4 Handizivi.....8			

2.1	Mune bindu here?	Hongu	1	→ Enda ku nhamba 2.4
		Kwete	2	
2.2	Mubindu menyu mune zvirimwa zvipi zvaakutodyiwa parizvino?  <i>TENDEREDZAI MHINDURO DZOSE</i>	Muriwo wemashizha akasvibira	1	
		Spinach	2	
		Manhanga / Bhatanati	3	
		Karotsi	4	
		Bhinzi dzisati dzasvika	5	
		Onyenzi	6	
		Madomasi	7	
		Hapana	8	
		Zvimwewo (Zvii)	9	
2.3	Pazvirimwa zvamataura pamusoro, ndezvipi zvamadya mumazuva manomwe apfuura?  <i>TENDEREDZAI MHINDURO DZOSE</i>	Muriwo wemashizha akasvibira	1	
		Spinach	2	
		Manhanga / Bhatanati	3	
		Karotsi	4	
		Bhinzi dzisati dzasvika	5	
		Onyenzi	6	
		Madomasi	7	
		Hapana	8	
		Zvimwewo (Zvii)	9	
2.4	Mune miti yemichero here pamusha penyu yamunowanzodya?	Hongu..... 1	→Endai kunhamba 3	
		Kwete..... 2		
2.5	Ndeyipi miti yemichero yamunayo?  <i>TENDEREDZAI MHINDURO DZOSE</i>	Mumango	1	
		Muranjisi, muremoni kana munachisi	2	
		Mukotopeya	3	
		Mugwavha	4	
		Muzhanje	5	
		Mupopo	6	
		Mupichisi	7	
		Mubanana	8	
		Muhaburosi	9	
		Muhacha	10	
		Mimwewo (Taurai zita)	11	
2.6	Mune munda here wamunorima zvirimwa zvakasiyana-siyana?	Hongu	1	→ Enda ku nhamba 2.4
		Kwete	2	
2.2		Chibage chinyoro (chichena)	1	

	Mubindu menyu mune zvirimwa zvipi zvaakutodiwa parizvino?	Chibage chinyoro – vitamin A orange maize	2	
	<i>TENDEREDZAI MHINDURO DZOSE</i>	Manhanga / Bhatanati	3	
		Binzi dzesugar binzi	4	
		Bhinzi dzeNUA45 kana Cherry	5	
		Mimwe miriwo yemashizha kusanganisa mubooramuboora	6	
		Mhunga, mapfunde kana zviyo	7	
		Hapana	8	
		Zvimwewo (Zvii)	9	
2.3	Pazvirimwa zvamataura pamusoro, ndezvipi zvamadya mumazuva manomwe apfuura?	Chibage chinyoro (chichena)	1	
	<i>TENDEREDZAI MHINDURO DZOSE</i>	Chibage chinyoro – vitamin A orange maize	2	
		Manhanga / Bhatanati	3	
		Binzi dzesugar binzi	4	
		Bhinzi dzeNUA45 kana Cherry	5	
		Mimwe miriwo yemashizha kusanganisa mubooramuboora	6	
		Mhunga, mapfunde kana zviyo	7	
		Hapana	8	
		Zvimwewo (Zvii)	9	

### 3. KUNOWANZOBVA MARI YEMHURI

<b>3 – Mumwedzi mitanhatu yapfuura, mari yaishandiswa mumba muno yainyanyobvepi? (<i>Shandisai makodhi ari pasi kunyora mabasa</i>)</b>			
<b>Mabasa anounza mari mumhuri nekukosha kwawo</b>		<b>Kodhi yebasa</b>	
<b>1</b>	<b>Basa rinounza mari zhinji</b>		
<b>2</b>	<b>Basa rechipiri</b>		
<b>3</b>	<b>Basa rechitatu</b>		
<b>4</b>	<b>Basa rechina</b>		
<b><i>Kodhi yemabasa anounza mari:</i></b> 1 = Inotumirwa nehama 2 = Kutengesa zvirimwa 3 = Zvirimwa zvemari 4 = Maricho 5 = Kupemha 6 = kupfuya nekutengesa zvipfuyo 7 = Mabasa emaoko		8 = Bhizimisi 9 = Kutengesa-tengesa 10 = Penjeni 11 = Muhoro pabasa 12 = Kuraura 13 = Zvipo 14 = Kurima nekutengesa miriwo 15 = Kukorokoza 16 = Kubika nekutengesa doro	17 = Rubatsiro rwechikafu 18 = Kuhodha nekutengesa zvinhu kubva kunze kwenyika 19 = Kuchinja mari 20 = Kutengesa huni kana zvimwe zviwanikwa zvemusango 21 = kuunganidza nekutengesa zviraswa – marata, zvigubhu nezvimwewo 22 = Rendi

		23= Zvimwewo 24= Hapana kumwe kunobva mari
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**4. KUWANIKWA KWECHIKAFU MUMBA**

4		Izvi zvaitika kakawanda zvakadini?			
		Hazvina kumbobvira zvaitika	Kashoma(Kamwechete kana kaviri mumwedzi wapfuura)	Zvinomboitika(Katatu kusvika kagumi mumwedzi wapfuura)	Kazhinji (Kupfuura kagumi mumwedzi wapfuura)
A	Mumasvondo mana apfuura makambonetseka here kuti mhuri yenyu ichashaya kudya kwakakwana kuti mese mugute?	0	1	2	3
B	Mumasvondo mana apfuura imi, kana mumwe wemumhuri ino akambotadza kudya zvikafu zvaanofarira nekuda kwekushaya?	0	1	2	3
C	Mumasvondo mana apfuura, imi kana mumwe wemumhuri ino akambotadza here kudya mhando dzezvikafu zvakasiyana-siyana nekuda kwekushaya?	0	1	2	3
D	Mumasvondo mana apfuura, imi kana mumwe wemumhuri	0	1	2	3



	ino akambodya chikafu chaasingafarire kana kuda here nekuda kwekushaika kwemari yekuzvitenga zvinodiwa / kana kufarirwa?				
E	Mumasvondo mana apfuura, imi kana mumwe wemumhuri ino akambodya here chikafu chishoma chaasingagute nekuda kwekuti maisava nechikafu chinokwana?	0	1	2	3
F	Mumasvondo mana apfuura, imi kana mumwe wemumhuri ino akambodya here zvikaфу zvisoma pazuva nekuda kwekuti chikafu chenyu chaiva chishoma?	0	1	2	3
G	Mumasvondo mana apfuura, mumba menyu makamboshaika here chikafu chechero mhando zvachose chekuti mudye nekuda kwekushaya?	0	1	2	3

---

## 5. RUZIVO PAMUSORO PEKUDYA KUNOVAKA MUVIRI

5.1 Chii chinonzi kudya kunovaka muviri (balanced diet)?

---

---

5.2 Ndeapi mapoka echikafu amunoziva?

---

---

5.3 Chii chinoitika kana vanhu vakasadya chikafu chakasiyana-siyana chinovaka muviri?

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---

5.4 Ndezvipi zvikafu zvamunonwanzodya? Nendava yeyi?

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5.5 Chii chamakadzidza nezvekudya kwakanaka muchikwata cheENNIPA?

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## 6. ZVINOBATSIRA KANA KUKANGANISA KUDYA KWANAKA MUDZIMBA

6.1 Chii chinoita kuti mudyemadyiro amunoita kana zvikafu zvamunodya mumba menyu?

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6.2 Chii chinoita kuti mupe vana venyu zvikafu zvamonuvapa?

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6.3 Zviri nyore zvakadzi kuti mushandise ruzivo rwamunarwo mukupa mhuri yenyu kudya / chikafu?

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## 7. ZVIKANGAIDZO NEZVINOBATSIRA / ZVIGONESO ZVEKUDYA ZVIKAFU ZVAKASIYANA-SIYANA ZVINOVAKA MUVIRI MUMHURI

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7.1 Ndeapi matambudziko / zvimhingamupinyi zvamunosangana nazvo mukuedza kupa mhuri yenyu kudya kwakanaka kunovala muviri?

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7.2 Muri kuakunda sei matambudziko / zvimhingamupinyi izvi?

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## **8. MAONERO ECHIRONGWA CHEENIPPA**

8.1 Kupinda kwenyu muchirongwa cheENIPPA kwaunza shanduko yakaita sei / ipi kumadyiro enyu semhuri?

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8.2 Ndezvipi zvikafu zvamava kudya iye zvino, zvamaisadya musati mapinda muchirongwa cheENIPPA?

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8.3 Munofunga kuti shanduko yemadyiro iyi icharamba iripo here?

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## Addendum 8: Women's In-depth Interview Questionnaire (Shona)

### Hurukuro yakadzama neMadzima ari muzvikwata zveENIPPA

#### Nhungamiro

Kwaziwai, zita rangu ndinonzi Delilah Takawira. Ndiri mudzidzi wechirongwa cheMaster of Nutrition paStellenbosch University. Ndiri kuitawo ongororo yekubudirira kwechirongwa cheLFSP mukukurudzira kushandura maitiro evanhu pamusoro peudyo hwevarimi munzvimbo ino. Imi masarudzwa pakati pemamawe madzimai ese ari muchirongwa cheENIPPA muno mamaMakoni kuti munge muchipindura mibvunzo muongororo ino. Ndinoda kukubvunzaiwo mibvunzo mishomanana inoenderana nezvamadzidza nekubatsirika nazvo kuburikidza nekuva kwenyu muchirongwa cheENIPPA. Zvichabuda muongororo ino zvichabatsira bedzi mukunyora ongororo iyi uye zvichabatsirawo mukurongwa kwezvimwe zvirongwa zvakafanana necheLFSP kuti zvinyatsobatsira varimi. Hurukuro yedu ingangotora awa imwechete. Mhinduro dzenyu nezvese zvamuchatiudza muhurukuro ino zvichachengetedzwa zvakananzika uye zvichashandiswa bedzi muongororo ino. Zita renyu harichazoshandiswa zvachose mutsanangudzo dzichanyorwa pamusoro pehurukuro ino. Tinokoshesa zvikuru maonero enyu, nekudaro tinokukurudzirai kuti mutaure makasununguka. Mungada here kuti kupinda muongororo iyi?

HONGU ☐

KWETE ☐

#### KUZIVIKANWA KWEKWESENEYA

Zera (makore) emupinduri		Ag-ecological zone	
Zita remubvunzi		Kweseneya #	
Wadhi		Bhuku rinogara mupunduri	
Zuva rehurukuro (DD/MM/YY)			

#### 1. Mamiro emba (Tenderedza minduro dzose kana kunyora # imoenderana nemhinduro)

1.1	Mukuru wemba murume kana mukadzi	1 = Murume                      2 = Mukadzi			
1.2	Mamiro emukuru wemba	1 = Akaroora achigara nemurume/mukadzi wake 2 = Akaroora asingagare nemurume kana mukadzi wake 3 = Akarambana nemumwe wake 4 = Akafirwa 5 = Haana / haasati aroora			
1.3	Makore emukuru wemba		1.4. Vanhu vanogara mumba muno vangani?		
(Zadzisa tafura iri pasi zvizere)					
	Nyora '0' kana pasina munhu mumba muno ari muchikwata ichi	Nhamba yevanhu vari pasi pemakore	Nhamba yevanhu vari pakati pemakore	Nhamba yevanhu vane	Nhamba yevanhu vane makore

		mashanu ekuberekwa	5-17 ekuberekwa	makore 18 -59	anopfuura 60																												
1.5	Varume																																
1.6	Vakadzi																																
1.7	Nherera (mubereki mumwechete kana vese)																																
1.8	Vakaremara kana vanorwara nepfungwa																																
1.9	Varwere kwenguva yakareba ( <i>ari kurwara parizvino kana anga achirwara kwemwedzi mitatu kana kupfuura zvekutadza kuita mabasa emazuva ese</i> )																																
<b>1.10</b> Mumwedzi gumi nemiviri yapfuura, imba yenyu yakambowana here rubatsiro (rwemari, chikafu kana zvimwewo zvekushandisa pamba) kubva kune vanotevera: (tenderedza hongu pane sarudzo dzese mhinduro)																																	
<table border="1"> <thead> <tr> <th>Kwakabva Rubatsiro</th> <th colspan="2"></th> <th>Rubatsiro rwacho</th> </tr> </thead> <tbody> <tr> <td>s. Hurumende</td> <td>1=Hongu</td> <td>2=Kwete</td> <td></td> </tr> <tr> <td>t. NGO</td> <td>1=Hongu</td> <td>2=Kwete</td> <td></td> </tr> <tr> <td>u. Machechi</td> <td>1=Hongu</td> <td>2=Kwete</td> <td></td> </tr> <tr> <td>v. MuZimbabwe kumamisha</td> <td>1=Hongu</td> <td>2=Kwete</td> <td></td> </tr> <tr> <td>w. MuZimbabwe mudhorobha</td> <td>1=Hongu</td> <td>2=Kwete</td> <td></td> </tr> <tr> <td>x. Kunze kwenyika</td> <td>1=Hongu</td> <td>2=Kwete</td> <td></td> </tr> </tbody> </table>						Kwakabva Rubatsiro			Rubatsiro rwacho	s. Hurumende	1=Hongu	2=Kwete		t. NGO	1=Hongu	2=Kwete		u. Machechi	1=Hongu	2=Kwete		v. MuZimbabwe kumamisha	1=Hongu	2=Kwete		w. MuZimbabwe mudhorobha	1=Hongu	2=Kwete		x. Kunze kwenyika	1=Hongu	2=Kwete	
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x. Kunze kwenyika	1=Hongu	2=Kwete																															
1.11	Sadza ramuri kudya mumba muno nderipi?	Chibage .....1 Mhunga .....2 Mapfunde.....3 Zviyo.....4 Raisi .....5 Gorosi yeBulgar... .....6 Zvimwewo.....8																															
1.12	Mune chibage (kana imwe mbeu yesadza ravari kudya) here parizvino?  → [Kana mhinduro iri kwete charikai kuenda kunhamba 2]	Hongu..... 1 Kwete .....2 Handizive.....8																															
1.13	Munofunga kuti chibage (kana imwe mbeu yesadza yavari kudya) chamunacho chichakusvitsai papi / chchapera rinhi?	Kwemasvondo maviri.....1 Kwemwedzi.....2 Pakati pemwedzi mumwe kusvika mitatu.....3 Kusvika patichakohwa.....4																															

	Handizivi.....8
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**2. KURIMWA KWECHIKAFU NEMHURI**

2.1	Mune bindu here?	Hongu	1	→ Enda ku nhamba 2.4
		Kwete	2	
2.2	Mubindu menyu mune zvirimwa zvipi zvaakutodyiwa parizvino?  <i>TENDEREDZAI MHINDURO DZOSE</i>	Muriwo wemashizha akasvibira	1	
		Spinach	2	
		Manhanga / Bhatanati	3	
		Karotsi	4	
		Bhinzi dzisati dzasvika	5	
		Onyenzi	6	
		Madomasi	7	
		Hapana	8	
		Zvimwewo (Zvii)	9	
2.3	Pazvirimwa zvamataura pamusoro, ndezvipi zvamadya mumazuva manomwe apfuura?  <i>TENDEREDZAI MHINDURO DZOSE</i>	Muriwo wemashizha akasvibira	1	
		Spinach	2	
		Manhanga / Bhatanati	3	
		Karotsi	4	
		Bhinzi dzisati dzasvika	5	
		Onyenzi	6	
		Madomasi	7	
		Hapana	8	
		Zvimwewo (Zvii)	9	
2.4	Mune miti yemichero here pamusha penyu yamunowanzodya?	Hongu.....	1	→ Endai kunhamba 3
		Kwete.....	2	
2.5	Ndeyipi miti yemichero yamunayo?  <i>TENDEREDZAI MHINDURO DZOSE</i>	Mumango	1	
		Muranjisi, muremoni kana munachisi	2	
		Mukotopeya	3	
		Mugwavha	4	
		Muzhanje	5	
		Mupopo	6	
		Mupichisi	7	
		Mubanana	8	
		Muhaborosi	9	
		Muhacha	10	
		Mimwewo (Taurai zita)	11	
2.6		Hongu	1	167

	Mune munda here wamunorima zvirimwa zvakasiyana-siyana?	Kwete	2	→ Enda ku nhamba 2.4
2.2	Mubindu menyu mune zvirimwa zvipi zvaakutodyiwa parizvino?  <i>TENDEREDZAI MHINDURO DZOSE</i>	Chibage chinyoro (chichena)	1	
		Chibage chinyoro – vitamin A orange maize	2	
		Manhanga / Bhatanati	3	
		Binzi dzesugar binzi	4	
		Bhinzi dzeNUA45 kana Cherry	5	
		Mimwe miriwo yemashizha kusanganisa mubooramuboora	6	
		Mhunga, mapfunde kana zviyo	7	
		Hapana	8	
		Zvimwewo (Zvii)	9	
2.3	Pazvirimwa zvamataura pamusoro, ndezvipi zvamadya mumazuva manomwe apfuura?  <i>TENDEREDZAI MHINDURO DZOSE</i>	Chibage chinyoro (chichena)	1	
		Chibage chinyoro – vitamin A orange maize	2	
		Manhanga / Bhatanati	3	
		Binzi dzesugar binzi	4	
		Bhinzi dzeNUA45 kana Cherry	5	
		Mimwe miriwo yemashizha kusanganisa mubooramuboora	6	
		Mhunga, mapfunde kana zviyo	7	
		Hapana	8	
		Zvimwewo (Zvii)	9	

### 3. KUNOWANZOBVA MARI YEMHURI

3 – Mumwedzi mitanhatu yapfuura, mari yaishandiswa mumba muno yainyanyobvepi? ( <i>Shandisai makodhi ari pasi kunyora mabasa</i> )			
<b>Mabasa anounza mari mumhuri nekukosha kwawo</b>		<b>Kodhi yebasa</b>	
<b>1</b>	<b>Basa rinounza mari zhinji</b>		
<b>2</b>	<b>Basa rechipiri</b>		
<b>3</b>	<b>Basa rechitatu</b>		
<b>4</b>	<b>Basa rechina</b>		
<b>Kodhi yemabasa anounza mari:</b>		8 = Bhizimisi	17 = Rubatsiro rwechikafu
1 = Inotumirwa nehama		9 = Kutengesa-tengesa	18 = Kuhodha nekutengesa zvinhu kubva kunze kwenyika
2 = Kutengesa zvirimwa		10 = Penjeni	19 = Kuchinja mari
3 = Zvirimwa zvemari		11 = Muhoro pabasa	

4 = Maricho 5 = Kupemha 6 = kupfuya nekutengesa zvifuyo 7 = Mabasa emaoko	12 = Kuraura 13 = Zvipo 14 = Kurima nekutengesa miriwo 15 = Kukorokoza 16 = Kubika nekutengesa doro	20 = Kutengesa huni kana zvimwe zviwanikwa zvemusango 21 = kuunganidza nekutengesa zviraswa – marata, zvigubhu nezvimwewo 22 = Rendi 23 = Zvimwewo 24 = Hapana kumwe kunobva mari
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#### 4. MADIYIRO EMHURI NEKUDYIWA KWEZVIKAFU ZVAKASIYANA-SIYANA

<b>4.1</b>	Vanhu vari <b>pamusoro pemakore mashanu</b> mumhuri muno vakadya kangani <b>nezuro</b> ?	<b>1 2 3 4</b> <b>NHAMBWA YEKUDYA</b>
<b>4.1b</b>	Ndiwo madyiro emhuri ino emazuva ese here aya?	<b>1=Hongu 2=Kwete</b>
<b>4.2</b>	Ko vana vari pakati pemwedzi mitanhatu nemakore mashanu vakadya kangani <b>nezuro</b> ? (Kana musina vana vari pakati pemakore aya mumhuri <b>tenderedzai 99 for N/A, kana vana vezera iri vanga vasipo nezuro tenderedzai 98</b> )	<b>1 2 3 4</b> <b>NHAMBWA YEKUDYA</b>
<b>4.2b</b>	Ndiwo madyiro evana ava emazuva ese here?	<b>1=Hongu 2=Kwete</b> <b>99=Hameno</b>

**4.3** Mumazuva **manomwe** apfuura, mhuri ino yakadya zvikafu zvinotevera **mazuva mangani** uye zvikafu izvi zvakabvepi? (**Nyorai 99 kuratidza kwakabva chikafu kana chisina kudyiwa nemhuri**)

<b>Chikafu</b>	<b>Chakadyiwa nezuro (0=Kwete 1=Hongu)</b>	<b>Nhamba yemazuva achakadyiwa (0 kusvika 7)</b>	<b>Kwakanyanyobva Chikafu (Shandisai makodhi ari pasi)</b>
1. Chibage, hupfu hwechibage, sadza			
2. Chibage kana hupfu hwe orange maize			
3. dzimwe mbeu dzesadza nezvinogadziwa nadzo (chingwa, raisi, mapfunde, mhubga, zviyo, gorosi nezvimwewo)			
4. Zvikafu zvimidzi (mufarinya, mbatatizi, mbambaira)			
5. Shuga kana zvinogadziwa neshuga (kusanganisa nzimbe majamu nezvimwe zvakadaro)			
6. Bhinzi kana pizi			
7. Bhinzi dzeNUA45 kana cherry			
8. Nzungu (kusanganisa dovi)			
9. Miriwo (kusanganisa inorimwa muminda, mabindu kana inokura yega kana yemusango yemashizha)			
10. Michero - ingava inorimwa mumisha kana kunhongwa musango (magwavha, mango, mabanana, maranjisi, mazhabje, tsubvu, nhunguru nemimwewo)			



11. Nyama (yemombe, yembudzi, yemhuka dzesango, yenguruve kana yakagaiwa kana dzimwe nyama tsvuku)			
12. Huku kana shiri nemazai (huku, madhadha neshiri)			
13. Hove (nyoro kana dzakaomeswa kusanganisa matemba)			
14. Mafuta, magwambiza kana bhata			
15. Mukaka kana zvinogadzirwa nemukaka			
16 Poriji reCorn Soya Blend			
17. Zvipembenene zvinodyiwa ( <i>madora, ishwa, mandere, majuru nezvimwewo</i> )			
<b>Makodhi yekwakanyanyobva chikafu</b> 1 = Zvakarimwa nemhuri 2 = Kutengwa munharaunda nemari kana kuchinjana nezvimwe 3= Kuunzwa nemhuri kubva kune dzimwe nzvimbo vachishandisa mari kana kuchinjana 4 = Kutumirwa kubva kunze kwenyika 5 = Kutumirwa kubva kune dzimwe nzvimbo munyika 6 = Kubva kuhurumende 7= Kukwereteswa	8= Kubva kune mamwe masangano anobatsira asiri hurumende 9= Zvipo (kubva kuhama kana vamwewo vabatsiri) 10 = Maricho 11 = Kukumbira 12 = Kuvhima nekunhonga musango 13 = Kunhongeredza muminda yevamwe 14 = Kumwewo		

#### 5. CHIKAFU CHINODYIWA NEVANHUKADZI NEKUSIYANA-SIYANA KWACHO

5.	<p>Iye zvino ndaakuda kukubvunzai nezvekudya nekunwa kwamakaita <u>nezuro</u> masikati kana manheru. Ndiri kunyanya kuda kuziva kuti makadya here zvikafu izvi, kunyage zvichireva kuti makazvidya zvakasangana nechimwe chikafu.</p> <p><b>VERENGA CHIKAFU CHIMWE NECHIMWE UCHIDAIDZIRA WONYORA KURTI CHAKADYIWA HERE KANA KWETE.</b></p>			
	<b>Chikafu</b>	<b>Hongu</b>	<b>Kwete</b>	<b>Handizivi</b>
1	Zvikafu zvinotengwa zvakawedzerwa hutano (commercially fortified foods)?	1	2	8
2	Sadza, chingwa, raisi, pasita, kana zvimwe zvikafu zvinogadzirwa nembewu dzesadza?	1	2	8
3	Chibage kana hupfu hwe Orange Maize			
4	Manhanga, karotsi, mapudzi, mifarinya kana mbambaira dzakaita ruvara rweyellow kana orenji mukati? <b><i>Kusanganisa bedzi mbaira dzeorange mukati</i></b>	1	2	8
5	Mbatatisi chena, madhumbe, mufarinya kana kumwe kudya kwemidzi?	1	2	8

6	Miriwo yakasvibira fanika sipinachi, muboora kana derere?	1	2	8
7	Mango dzakaibva kana mapopo?	1	2	8
8	Mimwe miriwo kana michero?	1	2	8
9	Nyama dzemukati dzakaita sechitaka, itsvo, moyo kana mapapu?	1	2	8
10	Nyama yemombe, ngurube, hwai, tsuro kana yemhuka dzesango?	1	2	8
11	Nyama yehuku, madhakisis, hanga kana dzimwe shiri?	1	2	8
12	Mazai?	1	2	8
13	Zvipukanana zvinobhururuka, hove nyoro kana dzakaomeswa?	1	2	8
14	Chikafu chinogadzira nebhinzi, nyemba, pizi, nyemba mezmimwewo zvakadaro?	1	2	8
15	Bhinzi dzeNUA45 kana Cherry			
16	Dovi kana zvimwe zvikafu zvinogadzirwa nenzungu?	1	2	8
17	Chizi, yogati kana zvimwe zvinogadzirwa nemukaka?	1	2	8
18	Chikafu chinogadzirwa nemafuta, magwambiza kana bhata?	1	2	8

**6. KUDYA KWEVANA VADIKI VACHIRI KUYAMWA VARI PAKATI PEMWEDZI MITANHATU KUSVIKA MAKUMI MAVIRI NEMITATU**

6	Iko zvino ndaakuda kukubvunzai maererano nezvekudya kana kunwa zvamakapa vana vari pakati pemwedzi mitanhatu kusvika kumakumi maviri nemitatu nezuro masikati kana manheru. Ndiri kunyanya kuda kuziva kuti mwana wenyu akazvidya here kana kwete, kunyange zvakadyiwa zvakasanga nezvimwe zvikafu.											
	Chikafu			Mwana mudiki wekutanga			Mwana wechipiri			Mwana wechitatu		
				Y	N	DK	Y	N	DK	Y	N	DK
Mwana akazvarawa riinhi?												
OR												
Mwana ane mwedzi mingani?												
Mwana akandya kangani nezuro masikati nemanheru?												
A	Mikaka yevana yekutanga?			1	2	8	1	2	8	1	2	8

B	Poriji rehupfu kana usvusvu?	1 2 8	1 2 8	1 2 8
C	Maporiji evana ekutenga akawedzerwa hutano?	1 2 8	1 2 8	1 2 8
D	Sadza, chingwa raisi, pasita kana chimwe chikafu chinogadzairwa nembeu dzesadza?	1 2 8	1 2 8	1 2 8
E	Manhanga, karotsi, mapudzi, mufarinya kana mbaira tsuku mukati kana mimwe miriwo yakaita yellow kana orenji mukati <b><i>kusanganisa vitamin A orange maize?</i></b>	1 2 8	1 2 8	1 2 8
F	Mbatatisi chena, madhumbe, mufarinya kana kumwe kudya kwemidzi?	1 2 8	1 2 8	1 2 8
G	Miriwo yakasvibira fanike sipinachi, muboora kana derere?	1 2 8	1 2 8	1 2 8
H	Mango kana mapopo zvakaibva?	1 2 8	1 2 8	1 2 8
I	Mimwe miriwo nemichero?	1 2 8	1 2 8	1 2 8
J	Chitaka, itsvo, moyo kana mapapu?	1 2 8	1 2 8	1 2 8
K	Nyama yemombe,, yenguruve, yehwai, yembudzi, tsuro kana yedzimwe mhuka dzesango?	1 2 8	1 2 8	1 2 8
L	Huku, madhadha, hanga kana dzimwe shiri dzinodyiwa?	1 2 8	1 2 8	1 2 8
M	Mazai?	1 2 8	1 2 8	1 2 8
N	Hove nyoro kana dzakaoma?	1 2 8	1 2 8	1 2 8

O	Chikafu chakagadzirwa nenyemba, bhinzi pizi, nyimo kana zvimwewo zvakadaro?	1 2 8	1 2 8	1 2 8
P	Chikafu chakagadzirwa nebhinzi dzeNUA45 kana cherry?	1 2 8	1 2 8	1 2 8
Q	Dovi kana zvimwe zvinogadzirwa nenzungu?	1 2 8	1 2 8	1 2 8
R	Chizi, yogati kana zvimwe zvinogadzirwa nwmukaka?	1 2 8	1 2 8	1 2 8
S	Zvikafu zvonogadzirwa nemafta, magwambiza kana bhata?	1 2 8	1 2 8	1 2 8
T	Huga, makeke, miti-payi, chokoreti, zviwitsi kana mabisikitsi?	1 2 8	1 2 8	1 2 8
U	Kumwe kudya kwakakorera kwandigadai ndasiya?	1 2 8	1 2 8	1 2 8
V	Mvura?	1 2 8	1 2 8	1 2 8
W	Mikaka usiri wemuzamu, wakaita sewemugaba, kondenzi, wehupfu kana mumbishi wemombe?	1 2 8	1 2 8	1 2 8
X	Zvinwiwa zvine shuga kana makokokora?	1 2 8	1 2 8	1 2 8
Y	Mahewu?	1 2 8	1 2 8	1 2 8
Z	Muto wemichero?	1 2 8	1 2 8	1 2 8
Z1	Tii kana kofi?	1 2 8	1 2 8	1 2 8
ZZ	Zvimwe zvinwiwa zvatisisna kutaure?	1 2 8	1 2 8	1 2 8

**7. KUWANIKWA KWECHIKAFU MUMBA**

<b>6</b>		<b>Izvi zvaitika kakawanda zvakadini?</b>			
		<b>Hazvina kumbobvira zvaitika</b>	<b>Kashoma(Kamwechete kana kaviri mumwedzi wapfuura)</b>	<b>Zvinomboitika(Katatu kusvika kagumi mumwedzi wapfuura)</b>	<b>Kazhinji (Kupfuura kagumi mumwedzi wapfuura)</b>
A	Mumasvondo mana apfuura makambonetseka here kuti mhuri yenyu ichashaya kudya kwakakwana kuti mese mugute?	0	1	2	3
B	Mumasvondo mana apfuura imi, kana mumwe wemumhuri ino akambotadza kudya zvikafu zvaanofarira nekuda kwekushaya?	0	1	2	3
C	Mumasvondo mana apfuura, imi kana mumwe wemumhuri ino akambotadza here kudya mhando dzezvikafu zvakasiyana-siyana nekuda kwekushaya?	0	1	2	3
D	Mumasvondo mana apfuura, imi kana mumwe wemumhuri ino akambodya chikafu chaasingafarire kana	0	1	2	3

	kuda here nekuda kwekushaika kwemari yekuzvitenga zvinodiwa / kana kufarirwa?				
E	Mumasvondo mana apfuura, imi kana mumwe wemumhuri ino akambodya here chikafu chishoma chaasingagute nekuda kwekuti maisava nechikafu chinokwana?	0	1	2	3
F	Mumasvondo mana apfuura, imi kana mumwe wemumhuri ino akambodya here zvikaфу zvisoma pazuva nekuda kwekuti chikafu chenyu chaiva chishoma?	0	1	2	3
G	Mumasvondo mana apfuura, mumba menyu makamboshaika here chikafu chechero mhando zvachose chekuti mudye nekuda kwekushaya?	0	1	2	3

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## **7. RUZIVO PAMUSORO PEKUDYA KUNOVAKA MUVIRI**

7.1 Chii chinonzi kudya kunovaka moviri (balanced diet)?

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7.2 Ndeapi mapoka echikafu amunoziva?

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7.3 Chii chinoitika kana vanhu vakasadya chikafu chakasiyana-siyana chinovaka moviri?

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7.4 Ndezvipi zvikafu zvamunonwanzodya? Nendava yeyi?

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7.5 Chii chamakadzidza nezvekudya kwakanaka muchikwata cheENNIPA?

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## **8. ZVINOBATSIRA KANA KUKANGANISA KUDYA KWANAKA MUDZIMBA**

8.1 Chii chinoita kuti mudyemadyiro amunoita kana zvikafu zvamunodya mumba menyu?

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8.2 Chii chinoita kuti mupe vana venyu zvikafu zvamunuvapa?

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8.3 Zviri nyore zvakadzi kuti mushandise ruzivo rwamunarwo mukupa mhuri yenyu kudya / chikafu?

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9.1 Ndeapi matambudziko / zvimhingamupinyi zvamunosangana nazvo mukuedza kupa mhuri yenyu kudya kwakanaka kunovaka muviri?

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10.3 Munofunga kuti shanduko yemadyiro iyi icharamba iripo here?

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## Addendum 9: Information Leaflet (English)

### PARTICIPANT INFORMATION LEAFLET

**TITLE OF THE RESEARCH INTERVENTION:** Evaluating the effectiveness of nutrition BCC interventions among smallholder farmers in Makoni rural district of Manicaland province in Zimbabwe

**REFERENCE NUMBER:**

**PRINCIPAL INVESTIGATOR:** Delilah Takawira

**ADDRESS:** Stellenbosch University  
Faculty of Medicine and Health Sciences  
Division of Human Nutrition  
Clinical Building, Francie van Zijl Drive  
Tygerberg  
7505, Cape Town, South Africa  
PO Box 241, Cape Town 8000

**CONTACT NUMBER:** +27 21 938 9135 / +263772729817

Dear Colleague

My name is Delilah Takawira and I am a Master of Nutrition Student at Stellenbosch University I would like to invite you to participate in a research intervention that aims to evaluate the effectiveness of nutrition BCC by the Livelihood and Food Security Intervention in increasing demand for safe, diverse and nutritious foods by households, particularly women of child bearing age and children in Makoni district of Manicaland Province in Zimbabwe.

Please take some time to read the information presented here, which will explain the details of this intervention and contact me if you require further explanation or clarification of any aspect of the study. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the **Health Research Ethics Committee (HREC) at Stellenbosch University** and will be conducted according to accepted and applicable National and International ethical guidelines and principles, including those of the international Declaration of Helsinki October 2008.

This study is trying to answer the following question: *How the Livelihoods and Food Security Intervention being implemented by Goal Zimbabwe in this area has helped you to improve your consumption of a wide variety of foods as a household, but particularly for your children aged 6 – 23 months. In am interested to know what the intervention has done in this respect and your perceptions about how the intervention's activities have contributed to your understanding, perception, attitudes and dietary practises.* We will ask you a set of questions either as a group or as individuals that will help us assess the following:

- Your level of participation in the intervention, the activities undertaken and how you viewed them
- Your knowledge about nutrition and healthy eating and where you obtained it from
- Your views and perceptions about the feasibility of practising what you have learned
- The factors influencing your dietary practises

You have been randomly selected to participate in the study as a key informant. I would like to ask you a few questions pertaining to your role as a farmer in this intervention being implemented by Goal in this area. This will take about 45 - 60 minutes of your time. The information from this discussion will be treated with strict confidentiality and will be used only for the purposes of the study together with information from other informants. Your name will not be used in any way in reference to the study findings. Should you choose to participate in this study, I would like to request that you give your honest opinions and knowledge to the questions being asked.

The findings of this study will help the LFSP intervention implementers to refine their support to you and improve the nutrition benefits of this intervention to your children and families. It will also contribute towards designing better interventions that will ensure the optimum health and welfare of your families. We do not anticipate any risks as a result of your participation in this study.

With your permission, we would like to record the interview. The recording will be typed up and the information will be used to write a report on the findings of the research. Researchers from Stellenbosch University will work with the data. Your name will not appear on any record. A number will be given to your interview and that number will be used to report the information throughout the report. The information will be handled confidentially and recordings will be destroyed at the end of the research.

**If you are willing to participate in this study please sign the attached Declaration of Consent and hand it to the investigator.**

Yours sincerely

Delilah Takawira  
Principal Investigator

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Declaration by participant

By signing below, I ..... agree to take part in a research study entitled **Evaluating the effectiveness of nutrition BCC interventions among smallholder farmers in Makoni rural district of Manicaland province in Zimbabwe**

I declare that:

- I have read the attached information leaflet and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.
- I fully understand and consent to the use of a recorder during interviews. The sole purpose is to accurately capture all responses which will later be typed and the formation analysed together with information from other interviews.
- 

Signed at (*place*) ..... On (*date*) ..... 2016.

.....

**Signature of participant**

## Addendum 10: Information Leaflet (Shona)

### GWARO REMASHOKO EKUZIVISA PAMUSORO PETSVAKURUDZO

**MUSORO WETSVAKURUDZO:** Ongororo yekubudirira kwechirongwa chekukurudzira kushandura maitiro evanhu pamusoro peudyo hwevarimi vemumaruwa ekuMakoni District muManicaland Province muZimbabwe.

**BHUKU NHAMBA:**

**MUKURU WETSVAKURUDZO:** Delilah Takawira

**KERO:** 6855 Mutemwa Hills ZIMRE Park Ruwa Harare, ZIMBABWE /  
Stellenbosch University  
Faculty of Medicine and Health Sciences  
Division of Human Nutrition  
Clinical Building, Francie van Zijl Drive  
Tygerberg 7505, Cape Town, South Africa  
Box 241, Cape Town 8000

**NHAMBA DZEFONI:** +27 21 938 9135 / +263772729817

Muri kukokwa kupinda mutsvakurudzo ine zita rapihwa pamusoro. Tinokumbira muverenge gwaro rino zvakanaka munzwisise nezvetsvakurudzo iyi. Ndapota bvunzai mibvunzo kuvakuru vetsvakurudzo pane zvamunenge musinganzwisise pamusoro petsvakurudzo ino. Zvakakosha kuti munyatsogutsikana nekunyatsonzwisisa kuti tsvakurudzo iyi iri kunyatsoita nezvei uye kuti mungapindawo sei muchirongwa chacho. Kupinda kwenyu mutsvakurudzo kuri kwamuri, makasununguka kusarudza kupinda kana kusapinda pasina kumanikidzwa. Hapana chakaipa chingakuwanei kana kurasikirwa kwamungaita kana mukasarudza kusapinda mutsvakurudzo. Kana masarudza kupinda mutsvakurudzo, makasununguka zvakare kubuda chero nguva kana maona kuti hamuchade kuramba muri mairi.

Tsvakurudzo iyi yakatenderwa kuti iitwe nevanoona nezvetsika dzemaitirwo akanaka etsvakurudzo, ve **Health Research Ethics Committee** paYunivhesiti ye Stellenbosch kuSouth Africa, kunova kunodzidza muongorori mukuru wetsvakurudzo ino. Tsvakurudzo ino iri kuitwawo zvakare maererano nemitemo yemaitirwo akanaka etsvakurudzo pasi rose *eDeclaration of Helsinki*, nemagwaro ekutevedzerwa kwetsvakurudzo muSouth Africa *eGuidelines for Good Clinical Practise* neve *Medical Research Council (MRC) Ethical Guidelines for Research*.

### Tsvakurudzo iyi iri pamusoro pezvei?

Tsvakurudzo ino iri kuitwa maMakoni chete, mumawadhi makumi matatu agere varimi vari muchirongwa che *Livelihoods and Food Security Intervention (LFSP)*. Tsvakurudzo iyi yakanangana nekuongorora kubudirira kwechirongwa cheLFSP mukukurudzira kushandurwa kwemaitiro ari pamusoro peudyo hwakanaka mudzimba dzevarimi vari muchirongwa ichi, icho chiri kutungamirirwa neGoal Zimbabwe munzvimbo ino. Izvi zviri kuitirwa kukurudzira vanhu kuti vasarudze zvekafu zvakanaka zvemhando dzakasiyana-siyana zvinovaka muviri zvizere kunyanya kumadzimai achiri kubereka uye vana vadiki. Tsvakurudzo ichaongororawo zvakare kuti tsika nemagariro evanhu muno nezvinhu zvinoenderana nekutengeswa kwechikafu mumisika nemuzvitoro maMakoni zviri kubatsiridzawo kana kunganisawo sei sarudzo idzi. Muongororo iyi, tsvakurudzo ino ichaita zvinotevera: kuongorora magwaro echirongwa chese kuti tione maitiro amaita chirongwa chisati chatanga nekonawo mabasa aitwa nechirongwa pamwe chete nemi mukukurudzira udyo hwakanaka kuvarimi. Ichasarudzawo zvakare vanhu vashoma, varume nevakadzi vachataura vakamirira chirongwa chese maererano neruzivo rwavo munezveudyo, maitiro avo mudzimba uye maonero avo nyaya dzeudyo idzi nebatsiro yavawana kubva kuchirongwa cheLFSP mukushandura ru180

nemaitiro avo. Tsvakurudzo ichaongororawo zvakare kuwanikwa kwezvikafo zvakasiana-siyana zvinodiwa kuvaka muviri mumisika nezvitoro zvakakomberedza. Mukupedzisira, tsvakurudzo ino icharatidza kuti chironzwa cheLFSP chaburira zvakaadini mukukurudzira udyo hwakanaka kuburikidza nekukurudzira varimi kuti vasarudze kudya kwakanaka kwakakasiyana-siyana. Ichapawo zvakare kurudziro dzinobatsira kuti chironzwa ichi chibudirire uye kuti zvimwe zvirongwa zvakanana naichochi zvicharongwa zvigonyatsobudirira mukushandura hupenyu hwevarimi vemumaruwa sevari mudunhu rino.

### **Sei masarudzwa kuti mupinde mutsvakurudzo?**

Zita renyu ranhongwa pakati pemazita evarimi vose vari muchironzwa cheLFSP. Munhu wese ari muchironzwa ichi anga aine mukana wakafana wekukwanisa kusarudzwa. Tinotarudzwa vanhu vashoma kuti vamirire varimi vese vari muchironzwa nemhaka yekuti hatikwanise kutaura nevarimi vose nekuti zvinotora nguva nemari yakawanda zviku zvinova zvatisina. Mhinduro dzenyu, nemaonero enyu achipa mufananidzo mukuru unomirira vanhu vose vari muchironzwa cheLFSP munzvimbo ino. Nekudaro, tinokumbirisa zviku kuti muve makatendeka pakupindura mibvunzo yese yamuchabvunzwa nekutipawo maonero enyu azere.

### **Mabasa enyu mutsvakurudzo ino achange akamira sei?**

Basa renyu guru mutsvakurudzo ino nderekupindura zvizere uye zvakanana mibvunzo yose yamuchabvunzwa. Izvi zvingangokutorerai maminitsi anosvita makumi mana nemashanu kana awa imwechete. Mhinduro dzenyu dzinofanira kuratidza ruzivo renyu, nemanzwisisiro enyu uye tsika nemagariro enyu pamwe nemaitiro enyu mazuva ese. Tinokumbirisa zviku kuti mutipe maonero enyu akatendeka, kwete kutiudza zvamunofunga kuti tiri kuda kunzwa. Mimwe mibvunzo ichakukumbirai kuti murangirire zvaitika mumazuva, masvondo kana mwedzi yakapfuura. Nekudaro tinokukumbirai kuti muedze nepamunogona kurangirire zvaitika kumashure ikoko. Zvisinei, kana musisarangirire, tapota titaurire chokwadi kuti makanganwa.

Kana muchizvitendera, tinokumbirawo kushandisa kamuchina kano kurekodha nhaurirano yedu nemi. Zvaticharekodha izvi zvichatibatsira mukunyora mhinduro dzenyu nemaonero enyu zvizere kana tonyora zvichabuda mutsvakurudzo. Vaongorori vetsvakurudzo iyi kuYunivesithi yeStellenbosch vachashanda nemhinduro idzi mukunyora magwaro pamusoro petsvakurudzo ino. Zita renyu harizoshandiswa mukunyorwa kana kutaurwa kwezvichabuda mutsvakurudzo ino. Munhu wega wega achapinda mutsvakurudzo achapihwa nhamba ichashandiswa mukuongorora nemukunyorwa kwezvichabuda mutsvakurudzo ino. Zvamuchatiudza muhurukuro ino zvichachengetwa zvakananzika uye zvati kurekodha zvichadzimwa kana tangopedza ongororo yetsvakurudzo ino.

### **Muchava nezvamuchawana here kubva mukupinda mutsvakurudzo ino?**

Hapana mugove kana mubairo wamuchawana nekuda kwekupinda mutsvakurudzo ino. Zvisinei, zvichabuda mutsvakurudzo ino zvichabatsira zviku mukubatsiridza kuti chironzwa cheLFSP chikubatsirei zvakanana kuti udyo hwenyu nemhuri dzenyu, kunyanya vana hunge hwakanaka. Zvichabuda zvichabatsirawo zvakare mukurongwa kwezvime zvirongwa zvichauya zvinobatsira varimi secheLFSP kuti zvinzatsobatsira kushandura udyo hwemhuri zvinoita kuti vanhu vave nehutano hwakanana, vana vakure zvakanaka, uye kuti dunhu nenyika zvibudirire.

### **Pane njodzi here dzamungatarisire kuburikidza nekupinda kwenyu mutsvakurudzo ino?**

Hatitarisire zvachose kuti pave nenjodzi yeripi rudzi ingakuwirei kuburikidza nekupinda kwenyu mutsvakurudzo ino.

### **Ndiani achawona mashoko neruzivo rwamuchatipa?**

Mashoko ese amuchatiudza mutsvakurudzo ino achachengetedzwa zvakananzika uye achasanganiswa neachabva kune vanhu vose vachakurukurwa navo mutsvakurudzo ino, ozoshandiswa bedzi muongororo nemukunyorwa kwemagwaro etsvakurudzo. Mashoko amuchatipa mutsvakurudzo ino achashandiswa neni,

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mukuru wetsvakurudzo, pamwe nemubatsiri wangu uye achasanganiswa neachabva kune dzimwe hurukuro. Zita renyu harichazoshandiswa zvachose munhaurwa kana zvinyorwa zvetsvakurudzo ino.

### **Chii chinotika kana zvikaitika kuti makuvara nekuda kwekupinda mutsvakurudzo ino?**

Hatitarisire zvachose kuti mukuvare nekuda wekupinda mutsvakurudzo ino.

### **Pane mubhadaro here wekupinda kwenyu mutsvakurudzo ino uye pane mari dزامungatarisirwa kuti mubvise here?**

Kwete, hakuna mubadharo ba wamuchapirwa nekuda kwekuti mapinda mutsvakurudzo ino. Hapanawo zvekare chamunotarisirwa kubadhara kuti munge muri mutsvakurudzo.

### **Pane zvimwe here zvamunofanira kuziva kana kuita?**

- Munogona kufonera ve*Health Research Ethics Committee* kuYunivhesiti yeStellenbosch panhamba dzinoti 0026721938 9207 kana muine zviri kukunetsai kana zvinyunyuto zvisina kugadziriswa nevakuru vetsvakurudzo ino.
- Muchapirwawo mufananidzo wegwaro rino kuti muchengete sezvinyorwa zvenyu.

### **Chitsidzo cheMutaari**

Nekusaina gwaro rino, ini..... ndinobvuma kupinda mutsvakurudzo ye*Ongororo yekubudirira kwechirongwa chekukurudzira kushandura maitiro evanhu pamusoro peudyo mudzimba dzevarimi vemumarwa ekuMakoni District muManicaland Province muZimbabwe*

Ndinotsidza kuti:

- Ndaverenga / ndaverengerwa mashoko ose ari mugwaro rino nebepa rekupa mvumo yangu yekupinda mutsvakurudzo izvo zvakanorwa nemutauro wandinonzwisisa uye wandinonyatsokwanisa kutaura
- Ndakave nemukana wekubvunza mibvunzo uye mibvunzo yangu yose yakanyatsopindurwa zvakanwana
- Ndinonzwisisa kuti kupinda kwangu mutsvakurudzo ino kuri **pamadiro angu** uye handina kumanikidzwa kuti ndipinde.
- Ndinogona kubuda mutsvakurudzo pane chero nguva yandingada pasina chakaipa chingaitwa kwandiri, kusarira kwandingaite kana kuripiswa kweipi mhando nekuda kwekuita izvi.
- Ndinogona kukumbirwa kuti ndibude mutsvakurudzo iyi isati yapera, kana vakuru vetsvakurudzo vaona zvakanakira kuti ndibude, kana kuti ndatadza kutevedzera hurongwa hwetsvakurudzo sekubvumirana kwatinenge taita pakutanga.
- Ndinonyatsonzwisa uye ndinopa mvumo yangu kuti hurukuro yedu irekodwe. Kurekodhewa kwehurukuro kuchabatsira bedzi kuti mhinduro dzangu dzinyatsobatwa zvakanaka pasina kushandurwa kana kukanganiswa pakunorwa mumagwaro etsvakurudzo ino pamwechete nemhiduro dzevamwewo vachapinda mutsvakurudzo.

Ndasaina pano pa(nzvimbo).....musi wa(zuva) ..... gore ra 2016.

.....  
Siginicha yemutauri

.....  
Siginicha yeChapupu

### Chitsidzo chemukuru weTsvakurudzo

Ini(zita) ..... ndinotsidza kuti:

- Ndatsanagura mashoko ose ari mugwaro rino zvizere kuna .....
- Ndakurudzira kuti amai / baba ava vabvunze mibvunzo uye ndatora nguva yakakwana kupindura mibvunzo yavo yose.
- Ndagutsikana kuti amai / baba ava vanyatsonzwisisa zvose zviripo pamusoro petsvakurudzo sekukurukura kwataita
- Ndashandisa / handina kushandisa mupirikiri (*kana mupirikiri ashandiswa ngaasainewo pazasi apa*)

Ndasaina pano pa(nzvimbo) ..... Musi wa(zuva) ..... Gore ra 2016.

.....  
Siginicha yemukuru weTsvakurudzo

.....  
Siginicha yeChapupu

### Chitsidzo cheMupirikiri

Ini (zita) ..... ndinotsidza kuti:

- Ndabatsira mukuru weTsvakurudzo ino (zita)..... Kutsanangura zvizere mashoko ose ari mugwaro rino kuna (zita remutauri)..... ndichishandisa rurimi rwechiShona.
- Takurudzira amai / baba ava kubvunza mibvunzo tikatorawo nguva yakakwana kupindura mibvunzo yose.
- Ndatsanangura muzvokwadi zvose zvataurwa pano sekuzvipihwa kwandaitwa.
- Ndinogutsikana kuti mutauri anyatsonzwisisa zvose zviri mugwaro rino nerekuva mvumo yake uye mibvunzo yake yose yapindurwa zvakanwana .

Ndasaina pano pa(nzvimbo) ..... musi wa(zuva) .....gore ra 2016

.....  
Siginicha yeMuturikiri

.....  
Siginicha yeChapupu



## Addendum 11: Women's Focus Group Discussion Guide (English)

### Focus group Discussion Guide

#### For women participating in Nutrition Behaviour Change Groups (ENNIPA Circles)














##### Introduction

*Hello my name is Delilah Takawira and this is my colleague..... I am a Master of Nutrition Student at Stellenbosch University. As part of my studies I am undertaking a research to evaluate the effectiveness of the nutrition behaviour change interventions employed by the LFSP in promoting demand for safe, diverse and nutritious foods. Your group has been randomly selected to participate in the study in a focus group discussion. I would like to ask you a few questions pertaining to your functioning as a group, how you have worked together, what you have learned and how you are applying it in your day to day lives. The results of this assessment will be used for the sole purpose of the study, which we hope will influence the design of future interventions. The discussion will take about 1 – 1.5 hours of your time. The information from this discussion will be treated with strict confidentiality and will be used only for the purposes of the study. Your names will not be used in any way in reference to the study findings. We value your honest opinions in this and we encourage you to speak freely. Would you like to participate in this study? YES ☐*

**NO** ☐

##### **NB\* Record Name of Group, Village, Ward**

Focus group discussion guidelines:

-  What are your food preferences in general?
-  How have your food preferences been affected by the intervention and your participation in this group?
-  What have you learned from participating in this circle?
-  How has what you have learned helped you and your families?
-  What new things have you been practising at home as a result of what you learned here?
-  How has your food consumption patterns as women, your children and families changed as a result of your learning?
-  What has changed in your eating behaviours?
-  How has the food you eat as a household changed? And why?
-  How easy has it been to practise what you learn here about eating healthy?
-  What challenges have you faced? And how have you overcome them?
-  How sustainable will it be to sustain these changes throughout the year, all the time?
-  How does your culture affect practising what you have learned about healthy eating in this ENNIPA circle?
-  Is what you are learning / have learned through ENIPPA Circle in line with your cultural and religious norms and beliefs? How similar or different is it?

- ✚ What are your aspirations regarding your family health and welfare and how does what you have learned here contribute to those aspirations?
- ✚ How has your demand for nutritious foods changed as a result of what you have learned in this circle?
- ✚ Where do people in this group get most of their food?
- ✚ How reliable are your major sources of food?
- ✚ How reliable are local markets in supplying nutritious foods?

## Addendum 12: Women's Focus Group Discussion Guide (Shona)

Gwaro rekutungamira hurukuro yemadzimai ari muchirongwa cheENIPPA

### Nhungamiro












Kwaziwai, zita rangu ndinonzi Delilah Takawira, uyu wandinaye anoitwa ..... Ndiri mudzidzi wechirongwa cheMaster of Nutrition paStellenbosch University. Ndiri kuitawo ongororo yekubudirira kwechirongwa cheLFSP mukukurudzira kushandura maitiro evanhu pamusoro peudyo hwevarimi munzvimbo ino. Chikwata chenyu chasarudzwa pakati pezvimwe zvikwata zviri muno mamaMakoni zviri muchirongwa cheENIPPA kuti chinge chichipindura mibvunzo muongororo ino. Tinoda kukubvunzaiwo mibvunzo mishomanana inoenderana nemafambiro echikwata chenyu, inosanganisa kuti munoshanda sei pamwechete, zvamadzidza muchikwata chino ndezvipi uye kuti muri kushandisa sei ruzivo rwamadzidza urwu mumagariro enyu mudzimba. Zvichabuda muongororo ino zvichabatsira bedzi mukunyora ongororo iyi uye zvichabatsirawo mukurongwa kwezvimwe zviringwa zvakanana necheLFSP kuti zvinyatsobatsira varimi. Hurukuro yedu ingangotora awa imwe nechidimbu. Mhinduro dzenyu nezvese zvamuchatiudza muhurukuro ino zvichachengetedzwa zvakananzika uye zvichashandiswa bedzi muongororo ino. Mazita enyu haachazoshandiwa zvachose mutsanangudzo dzichanyorwa pamusoro pehurukuro ino. Tinokoshesa zvikuru maonero enyu, nekudaro tinokukurudzirai kuti mutaure makasununguka. Mungada here kuti tipfuirire mberi nehurukuro?

**HONGU** ☐

**KWETE** ☐

**NB\*\* NYORA ZITA REBOKA, WADHI NEBHUKU**

### Mibvunzo ichatungamira hurukuro:

-  Ndezvipi zvikafu zvamunowanzofarira?
-  Chirongwa cheENIPPA chashandura sei zvikafu zvamunofarira?
-  Zvii zvamadzidza kubva mukuva kwenyu muchikwata chino cheENIPPA?
-  Zvamadzidza zvabatsira sei imi nemhuri dzenyu?
-  Ndezvipi zvinhu zvitsva zvamava kuita Mudzimba dzenyu zvabva mukudzidza kwenyu muchikwata chino cheENIPPA?
-  Kudya kwenyu semadzimai, kwevana venyu uye kwemhuri dzenyu kwashanduka sei nekuda kwezvidzidzo zvenyu muENIPPA?
-  Ndezvipi zvanyanyoshanduka pamadyiro enyu?
-  Zvikafu zvamunodya semhuri zvashanduka sei? Nemhaka yei zvashanduka?
-  Zviri nyore zvakadii kudya chikafu chakanaka chine hutano sekudzidza kwamuri kuita muchikwata chino?
-  Ndezvipi zvimhingamupinyi zvasangana nazvo? Muri kuzvikurira sei?
-  Zviri nyore zvakadii kuti murambe muchidya zvakanaka sekudzidza kwamuri kuita mumhuri dzenyu nguva dzose, gore rose?

- 
- ✚ Tsika nemagariro enyu zvinobatsira kana kukanganisa sei kuita zvose zvamadzidza panyaya dzeudyo muchikwata chino cheENIPPA mumhuri dzenyu nguva dzose?
  - ✚ Zvii zvamunoshuvira maererano nehutano nekugara zvakanaka kwemhuri dzenyu uye zvamuri kudzidza pamusoro peudyo muchikwata chino cheENIPPA zvinobatsira sei kukurudzira budiriro yezvishuviro zvenyu izvi?
  - ✚ Kuda kwenyu nekutsvaga kwenyu zvikafu zvakanaka zvinovaka muviri kwashanduka sei nekuda kwezvamuri kudzidza muchikwata chino?
  - ✚ Vanhu vazhinji vari muchikwata chino vanowanepi chikafu chavanodya?

Misika inotengesa chikafu chinovaka muviri inonyatsoshanda zvakanaka here munzvimbo ino?

## Addendum 13: Men's Focus Group Discussion Guide (English)

### Focus group Discussion Guide

#### For Men participating in a farmer group / ENNIPA Circle or value chain group
















#### Introduction

*Hello my name is Delilah Takawira and this is my colleague..... I am a Master of Nutrition Student at Stellenbosch University. As part of my studies I am undertaking a research to evaluate the effectiveness of the nutrition behaviour change interventions employed by the LFSP in promoting demand for safe, diverse and nutritious foods. Your group has been randomly selected to participate in the study in a focus group discussion. I would like to ask you a few questions pertaining to your functioning as a group, how you have worked together, what you have learned and how you are applying it in your day to day lives. The results of this assessment will be used for the sole purpose of the study, which we hope will influence the design of future interventions. The discussion will take about 1 – 1.5 hours of your time. The information from this discussion will be treated with strict confidentiality and will be used only for the purposes of the study. Your names will not be used in any way in reference to the study findings. We value your honest opinions in this and we encourage you to speak freely. Would you like to participate in this study? YES ☐*

**NO** ☐

#### **NB\* Record Name of Group, Village, Ward**

Focus group discussion guidelines:

-  What are your food preferences in general?
-  How have your food preferences been affected by the intervention?
-  What have you learned from participating in this group?
-  How has what you have learned helped you and your families?
-  What new things have you been practising at home as a result of what you learned here?
-  How has your food consumption patterns as men, your children and families changed as a result of your learning?
-  What has changed in your eating behaviours?
-  How has the food you eat as a household changed? And why?
-  How do you as men, influence what is eaten at home?
-  How easy has it been to practise what you learn here about healthy eating at home?
-  What challenges have you faced? And how have you overcome them?
-  How sustainable will it be to sustain these changes throughout the year, all the time?
-  How does your culture affect practising what you have learned about healthy eating in this ENNIPA circle / value chain group/ farmer group?
-  What are your aspirations regarding your family health and welfare?
-  How does what you have learned here contribute to those aspirations?

- ✚ How has your demand for nutritious foods changed as a result of what you have learned in this group?
- ✚ Where do people in this group get most of their food?
- ✚ How functional are local markets in supplying nutritious foods?

## Addendum 14: Men's Focus Group Discussion Guide (Shona)

### Gwaro rekutungamira hurukuro yevarume vari muchirongwa cheENIPPA

#### Nhungamiro

Kwaziwai, zita rangu ndinonzi Delilah Takawira, uyu wandinaye anoitwa ..... Ndiri mudzidzi wechirongwa cheMaster of Nutrition paStellenbosch University. Ndiri kuitawo ongororo yekubudirira kwechirongwa cheLFSP mukukurudzira kushandura maitiro evanhu pamusoro peudyo hwevarimi munzvimbo ino. Chikwata chenyu chasarudzwa pakati pezvime zvikwata zviri muno mamaMakoni zviri muchirongwa cheENIPPA kuti chinge chichipindura mibvunzo muongororo ino. Tinoda kukubvunzaiwo mibvunzo mishomanana inoenderana nemafambiro echikwata chenyu, inosanganisa kuti munoshanda sei pamwechete, zvamadzidza muchikwata chino ndezvipi uye kuti muri kushandisa sei ruzivo rwamadzidza urwu mumagariro enyu mudzimba. Zvichabuda muongororo ino zvichabatsira bedzi mukunyora ongororo iyi uye zvichabatsirawo mukurongwa kwezvimwe zvirongwa zvakananana necheLFSP kuti zvinyatsobatsira varimi. Hurukuro yedu ingangotora awa imwe nechidimbu. Mhinduro dzenyu nezvese zvamuchatiudza muhurukuro ino zvichachengetedzwa zvakananzika uye zvichashandiswa bedzi muongororo ino. Mazita enyu haachazoshandiwa zvachose mutsanangudzo dzichanyorwa pamusoro pehurukuro ino. Tinokoshesa zvikuru maonero enyu, nekudaro tinokukurudzirai kuti mutaure makasununguka. Mungada here kuti tipfuirire mberi nehurukuro?

**HONGU** ☐

**KWETE** ☐

Focus group discussion guidelines:

- ✚ Ndezvipi zvikafo zvamunonyanyofarira?
- ✚ Chirongwa cheENIPPA chashandura sei zvikafo zvamunofarira?
- ✚ Ndezvipi zvamadzidza kuburikidza nemukushanda kwenyu muchikwata chino?
- ✚ Zvamadzidza zvabatsira sei imi nenhuri dzenyu?
- ✚ Ndezvipi zvinhu zvitsva zvamava kuita mudzimba dzenyu zvabva mukudzidza kwenyu muchikwata chino?
- ✚ Kudya kwenyu sevarume, vana venyu nemhuri dzenyu kwashanduka sei nekuda kwekudzidza kwamuri kuita muchikwata chino?
- ✚ Ndezvipi zvashanduka mumadyiro enyu?
- ✚ Zvikafo zvamunodya mudzimba dzenyu zvashanduka sei? Nemhaka yei zvashanduka kudai?
- ✚ Imi sevarume munoitei mukubatsira kuronga zvinodyiwa mudzimba dzenyu?
- ✚ Zviri nyore zvakadii kuita zvamunodzidza muENIPPA nezvekudya kwakanaka mudzimba dzenyu?
- ✚ Ndeapi matambudziko kana zvimhingamupinyu zvasangana nazvo? Uye muri kuzvikunda sei?
- ✚ Zviri nyore zvakadii kuti murambe muchidya zvakakanaka sekudzidza kwamuri kuita mumhuri dzenyu nguva dzose, gore rose?
- ✚ Tsika nemagariro enyu zvinobatsira kana kukanganisa sei kuita zvose zvamadzidza panyaya dzeudyo muchikwata chino cheENIPPA mumhuri dzenyu nguva dzose?
- ✚ Zvii zvamunoshuvira maererano nehutano nekugara zvakakanaka kwemhuri dzenyu?

- 
- ✚ Zvamuri kudzidza pamusoro peudyo muchikwata chino cheENIPPA zvinobatsira sei kukurudzira budiriro yezvishuviro zvenyu izvi?
  - ✚ Kuda kwenyu nekutsvaga kwenyu zvikafu zvakanaka zvinovaka muviri kwashanduka sei nekuda kwezvamuri kudzidza muchikwata chino?
  - ✚ Vanhu vazhinji vari muchikwata chino vanowanepi chikafu chavanodya?

Misika inotengesa chikafu chinovaka muviri inonyatsoshanda zvakanaka here munzvimbo ino?



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## Addendum 15: Market Assessment Checklist

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### Market Assessment Observation Checklist





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#### ***Introduction***






Demand for nutritious food should be met by supply of the food from own production, local and distal markets and other sources such as remittances. In order to fully understand the extent to which the intervention has created demand for nutritious food, a rapid market observation will be carried out. This will be done in all the areas where Focus Group Discussions will be conducted, and will assess the availability and range of food available on the markets. The exercise will be mostly an observation with minimal interaction with market players as necessary to understand the dynamics. The following checklist will be used for this assessment;

#### ***Checklist for the market assessment***

##### **Observe:**

-  Range and type of foods being sold
-  Type of people buying and selling from the markets
-  Type of markets – formal, informal, farmer-to-farmer, farm-gates etc.
-  Amount of stock available

##### **Enquire:**

-  What are the commonly demanded foods and reasons?
-  Main buyers from the market / reliance of local communities on the markets
-  Demand and supply issues
-  Seasonality in food demand and supply and the factors driving it.
-  Any changes in consumer demand for certain foods over the years and possible reasons.

## Addendum 16: HREC Ethical Approval October 2016



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### Approval Notice Response to Modifications- (New Application)

05-Dec-2016  
Takawira, Delilah D

**Ethics Reference #:** S16/04/067

**Title:** Evaluating the effectiveness of nutrition behavior change communication interventions among smallholder farmers in Makoni rural district of Manicaland

Dear Ms Delilah Takawira,

The **Response to Modifications - (New Application)** received on 19-Sep-2016, was reviewed by members of Health Research Ethics Committee 2 via Expedited review procedures on 11-Oct-2016 and was approved.  
Please note the following information about your approved research protocol:

**Protocol Approval Period:** 11-Oct-2016 -10-Oct-2017

Please remember to use your **protocol number** (S16/04/067) on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

#### **After Ethical Review:**

Please note a template of the progress report is obtainable on [www.sun.ac.za/rds](http://www.sun.ac.za/rds) and should be submitted to the Committee before the year has expired. The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

Translation of the consent document to the language applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372

Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

#### **Provincial and City of Cape Town Approval**

Please note that for research at a primary or secondary healthcare facility permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Department of Health ([healthres@pgwc.gov.za](mailto:healthres@pgwc.gov.za) Tel: +27 21 483 9907) and Dr Helene Visser at City Health ([Helene.Visser@capetown.gov.za](mailto:Helene.Visser@capetown.gov.za) Tel: